BOARD OF ALDERMAN

Monday, May 12, 2025 at 6:00 PM

Landis Board Room

AGENDA

PLEASE SILENCE ALL CELL PHONES

1. INTRODUCTION:

1.1 Call Meeting to Order

1.2 Welcome

1.3 Moment of Silence and Pledge of Allegiance

1.4 Proclamation Honoring Police Officer Appreciation Week May 11-17, 2025

1.5 Proclamation Honoring Public Works Week May 18-24, 2025

1.6 Adoption of Agenda

2. CONSENT AGENDA:

All items below are considered to be routine by the Board of Aldermen and will be enacted by one motion. There will be no separate discussion on these items unless an Aldermen member so requests, in which event, the item will be removed from the Consent Agenda and placed in the appropriate corresponding Agenda Section to then be considered.

REQUESTED ACTION: Motion to Approve Consent Agenda as presented

2.1 Consider Approval of Work Session Meeting Minutes from April 10, 2025, Regular Scheduled Meeting Minutes from April 14, 2025, and Budget Retreat #2 Meeting Minutes from April 16, 2025

2.2 Consider Approval of Hosting OneBlood Blood Drive June 12, 2025, for the Community and Additionally Consider Employee Incentive of 4-Vacation Hours for Donating

3. CITIZEN COMMENTS:

All citizen comments are limited to 3 minutes.

3.1 Citizens' Comments

4. PRESENTATIONS:

4.1 Consider Presentation of FY26 Budget

5. ORDINANCES/RESOLUTIONS:

5.1 Consider Approval of Resolution #2025-05-12 to Adopt the Iredell-Rowan Hazard Mitigation Plan

6. CONSIDERATIONS:

6.1 Consider Approval of Awarding the Town Hall and Fire Department Roof Washing Bid (Project 25-58)

6.2 Consider Approval of the Electric Substation Material Bid (Project 25-62)

6.3 Consider Approval to Award the Bull-Wheel Tensioner Bid to Sherman & Reilly in the Amount of $63,295 (Project 25-114)

6.4 Consider Approval of Awarding the Four-Drum Puller Bid to Sherman & Reilly in the Amount of $169,166 (Project 25-113)

6.5 Consider Approval to Award the Transformers Bid to Sunbelt Solomon in the Amount of $35,400 (Project 25-112)

6.6 Consider Approval of Replacing the Belson Outdoors Waldorf Bench with the SiteScapes Westport Bench for the DC & Frances Linn Community Park

6.7 Consider Discussion of Board Member Appointment to DC & Frances Linn Committee

7. REPORTS:

7.1 Departmental Reports (Included in the Board Packet)

7.2 Financial Report (Included in the Board packet)

7.3 Town Manager Report (Included in the Board packet)

8. UPCOMING EVENTS:

8.1 Upcoming Events (Included in the Board Packet)

9. CLOSING:

9.1 Board Comments

9.2 Motion to Adjourn

Proclamation

PROCLAMATION HONORING POLICE OFFICER APPRECIATION WEEK
May 11-17, 2025

WHEREAS, law enforcement officers serve and protect our communities with integrity, courage, and dedication, often placing themselves in harm's way to ensure the safety and wellbeing of others; and

WHEREAS, these officers perform a vital public service by enforcing our laws, maintaining peace, responding to emergencies, and building trust through community engagement; and

WHEREAS, Police Officer Appreciation Week provides an opportunity to honor and recognize the service and sacrifices of the men and women in law enforcement, as well as to remember those who have made the ultimate sacrifice in the line of duty; and

WHEREAS, we acknowledge and appreciate the commitment of our local police officers who work tirelessly—day and night, in all conditions—to keep our neighborhoods, streets, and families safe; and

WHEREAS, it is important that we, as a community, support and thank our law enforcement personnel and express our gratitude for their continued service and dedication;

NOW, THEREFORE, BE IT RESOLVED, I, Meredith Bare Smith, Mayor of the Town of Landis, North Carolina, proclaim the week of May 11th through 17th, 2025, as Police Officer Appreciation Week in Landis, and urge all citizens to recognize and honor the brave men and women of law enforcement for their exceptional contributions to our community.

I hereby set my hand and have caused the Seal of the Town of Landis, North Carolina, to be affixed this the 12th day of May 2025.

Attest:

_____ _____

Meredith Bare Smith, Mayor Madison Stegall, Town Clerk

Proclamation

PROCLAMATION HONORING NATIONAL PUBLIC WORKS WEEK
May 18-24, 2025

WHEREAS, public works professionals focus on infrastructure, facilities, and services that are of vital importance to sustainable and resilient communities and to public health, high quality of life, and well-being of the people of Landis; and,

WHEREAS, these infrastructure, facilities, and services could not be provided without the dedicated efforts of public works professionals, who are engineers, managers, and employees at all levels of government and the private sector, who are responsible for rebuilding, improving, and protecting our nation's transportation, water supply, water treatment and solid waste systems, public buildings, and other structures and facilities essential for our citizens; and,

WHEREAS, it is in the public interest for the citizens, civic leaders, and children in Landis to gain knowledge of and maintain an ongoing interest and understanding of the importance of public works and public works programs in their respective communities; and,

NOW, THEREFORE, BE IT RESOLVED, I, Meredith Bare Smith, Mayor of the Town of Landis, North Carolina, proclaim the week of May 18th through 24th, 2025, as National Public Works Week. I urge all citizens to join with representatives of the American Public Works Association and government agencies in activities, events, and ceremonies designed to pay tribute to our public works professionals, engineers, managers, and employees and to recognize the substantial contributions they make to protecting our national health, safety, and advancing quality of life for all.

I hereby set my hand and have caused the Seal of the Town of Landis, North Carolina, to be affixed this the 12th day of May 2025.

Attest:

_____ _____

Meredith Bare Smith, Mayor Madison Stegall, Town Clerk

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Madison Stegall, Town Clerk

ITEM TYPE: Minutes

AGENDA SECTION: Consent Agenda

SUBJECT: **Consider Approval of Work Session Meeting Minutes from April 10, 2025, Regular Scheduled Meeting Minutes from April 14, 2025, and Budget Retreat #2 Meeting Minutes from April 16, 2025**

DETAILS:

WORK SESSION

Thursday, April 10, 2025 at 5:30 PM

Landis Board Room

MINUTES

PLEASE SILENCE ALL CELL PHONES

Present: Mayor Meredith B. Smith, Alderman Tony Corriher, Alderman Ryan Nelms, Alderman Darrell Overcash

Absent: Mayor Pro-Tem Ashley Stewart

Staff Present: Town Manager Michael Ambrose, Deputy Town Clerk Maddalyn Shuffler, Town Attorney Rick Locklear, Police Chief Matthew Geelen, Fire Chief Jason Smith, Public Works Director Blake Abernathy, Parks And Rec Director Jessica St. Martin

1. INTRODUCTION:

1.1 Call Meeting to Order

Mayor Smith called the meeting to order at 5:30 PM.

1.2 Welcome

Mayor Smith welcomed those in attendance.

1.3 Adoption of Agenda

ACTION: A MOTION WAS MADE TO ADOPT THE AGENDA AS PRESENTED.
Moved By: Tony Corriher, seconded by Ryan Nelms
Motion Passed: 3-0
Voting For: Darrell Overcash, Tony Corriher, Ryan Nelms

2. CONSIDERATIONS:

2.1 Consider Discussion from Rowan County Tourism regarding Welcome and Wayfinding Signs

James Meacham from Rowan County Tourism provided an overview of the wayfinding and welcome signage program. He explained that the project was funded through Federal American Rescue Plan funds secured by Rowan County Tourism. The program aimed to benefit towns and communities with lasting, permanent signage.

Mr. Meacham detailed that across the entire county, there would be 78 different signs, including 15 boulevard signs, 43 pedestrian signs, and 20 welcome signs. For Landis specifically, the investment was around $70,000, representing about 17% of the total project budget.

He described the proposed locations for welcome signs in Landis, including one already installed coming from the south, a new proposed location past the Advanced Auto (1780 S. Main Street), and options to replace existing banner-style signs. Additionally, two boulevard signs and eight pedestrian signs were planned for Landis.
Mr. Meacham discussed the landscaping and lighting packages that would accompany the welcome signs, noting that solar packs might be used if direct electrical connections were not available. He assured the board that the signs were designed to last 25-30 years with minimal maintenance required.
Town Manager Michael Ambrose mentioned that the town had a blanket encroachment agreement with the Department of Transportation (DOT), which would allow for the installation of the new sign if approved.

ACTION: A MOTION WAS MADE TO APPROVE THE PLACEMENT OF THE SECOND WELCOME SIGN PROVIDED BY ROWAN COUNTY TOURISM AT THE LOCATION OF 1780 S. MAIN ST.
Moved By: Tony Corriher, seconded by Darrell Overcash
Motion Passed: 3-0
Voting For: Darrell Overcash, Tony Corriher, Ryan Nelms

2.2 Consider Approval of Rowan County Tax Collection Agreement
Town Manager Michael Ambrose presented the Rowan County Tax Collection Agreement for approval. He explained that the agreement, originally adopted in 2020, was being refiled as an evergreen agreement.
Manager Ambrose detailed that currently, the town pays 1.35% of collections for ad valorem taxes, excluding registered motor vehicle taxes, to the county. This rate would remain in effect until June 30, 2025. Starting July 1, 2026, the rate would increase to 1.5% of collections and remain at that level until terminated by either party.
He noted that the town currently pays about $32,000 for this service to the county, with payments received monthly. Manager Ambrose also mentioned that if the town decided to terminate the agreement, they would need to provide six months' notice prior to the start of the next fiscal year.

ACTION: A MOTION WAS MADE TO APPROVE THE INTERLOCAL AGREEMENT BETWEEN ROWAN COUNTY AND THE TOWN OF LANDIS FOR PROPERTY TAX COLLECTION SERVICES WITH THE 1.5% COLLECTION RATE.
Moved By: Darrell Overcash, seconded by Tony Corriher
Motion Passed: 3-0
Voting For: Darrell Overcash, Tony Corriher, Ryan Nelms

2.3 Consider Discussion of the Agenda Packet for the April 14, 2025, Regular Scheduled Meeting in Order to Provide Opportunities for Board Members to Study Issues, Gather and Analyze Information, and Clarify Direction for Staff

4/14/25 Agenda Items Discussed: (The Agenda for 4/14/25 was discussed sequentially, only the items that were deliberated will be mentioned below)

3.1 Consider Approval to Recommend that the Rowan County Board of Commissioners Increase the East Landis Water District Fire Protection Tax Rate to $.0825 Cents Per $100 Valuation and Consider Approval of Corresponding Resolution #2025-04-14-2
Town Manager Michael Ambrose introduced a discussion about a proposed tax increase from 4.25 cents per $100 valuation to 8.25 cents per $100 valuation. He provided historical context, noting that

the original tax levied in 1997 was 5 cents per $100 valuation, which was lowered to 4.2 cents in 2003 and increased to 4.25 cents in 2015.

Manager Ambrose explained that the proposed increase was due to growing operational costs and safety equipment needs of the fire department. He provided details on the costs associated with fire department personnel and equipment, noting that the total cost to outfit one firefighter was about $5,110, not including self-contained breathing apparatus (SCBA) equipment.

Fire Chief Jason Smith provided additional information on call volumes and percentages for the East Landis district. He noted that the percentage of calls in East Landis was likely closer to 10%, higher than the previously estimated 7%. Chief Smith provided call volume statistics for recent years, showing an overall increase in calls both overall and in the East Landis district.

Board members discussed the mutual aid system and its benefits, noting that neighboring departments like Kannapolis assist without charge. They also discussed the need to ensure that all areas are paying their fair share for fire protection.

3. CLOSING:

3.1 Motion to Adjourn

ACTION: A MOTION WAS MADE TO ADJOURN AT 6:00PM

Moved By: Tony Corriher, seconded by Darrell Overcash

Motion Passed: 3-0

Voting For: Darrell Overcash, Tony Corriher, Ryan Nelms

Respectfully Submitted,

_____

Madison T. Stegall, Town Clerk

DRAFT

BOARD OF ALDERMAN

Monday, April 14, 2025 at 6:00 PM

Landis Board Room

MINUTES

PLEASE SILENCE ALL CELL PHONES

Present: Mayor Meredith B. Smith, Mayor Pro-Tem Ashley Stewart, Alderman Tony Corriher, Alderman Ryan Nelms, Alderman Darrell Overcash

Staff Present: Town Manager Michael Ambrose, HR Director/Town Clerk Madison Stegall, Deputy Town Clerk Maddalyn Shuffler, Town Attorney Rick Locklear, Police Chief Matthew Geelen, Fire Chief Jason Smith, Public Works Director Blake Abernathy, Parks And Rec Director Jessica St. Martin

1. INTRODUCTION:

1.1 Call Meeting to Order

Mayor Smith called the meeting to order at 6:00 PM.

1.2 Welcome

Mayor Smith welcomed those in attendance.

1.3 Moment of Silence and Pledge of Allegiance

Mayor Smith led those in attendance in a moment of silence and the Pledge of Allegiance.

1.4 Proclamation Honoring Lineworker Appreciation Days April 14 and April 18, 2025

Mayor Smith read a proclamation honoring lineworkers and designating April 14 and April 18, 2025, as Lineworker Appreciation Days in the Town of Landis. The proclamation recognized the important work of electric lineworkers in maintaining power lines and ensuring safe, reliable energy for the community.

1.5 Proclamation Honoring Administrative Professionals' Day April 23, 2025

Mayor Smith read a proclamation designating April 23, 2025, as Administrative Professionals' Day in the Town of Landis. The proclamation recognized the essential role of administrative professionals in contributing to the efficiency, organization, and success of businesses and institutions.

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1.6 Proclamation Honoring Firefighter Appreciation Week May 4-10, 2025

Mayor Smith read a proclamation designating May 4-10, 2025 as Firefighter Appreciation Week in the Town of Landis. The proclamation recognized the dedication, courage, and professionalism of firefighters in responding to emergencies and protecting the lives and property of the community.

1.7 Proclamation Honoring Professional Municipal Clerks Week May 4-10, 2025

Mayor Smith read a proclamation designating May 4-10, 2025 as Professional Municipal Clerks Week in the Town of Landis. The proclamation recognized the vital role of professional municipal clerks in local government and their commitment to improving the administration of their offices through education and professional development.

1.8 Adoption of Agenda

ACTION: A MOTION WAS MADE TO ADOPT THE AGENDA WITH THE ADDITION OF ITEM 6.13 INTO CONSIDERATIONS - CONSIDER APPROVAL OF LOCKE LANE CHANGE ORDER #1 (PROJECT 25-02)

Moved By: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

2. CONSENT AGENDA:

All items below are considered to be routine by the Board of Aldermen and will be enacted by one motion. There will be no separate discussion on these items unless an Aldermen member so requests, in which event, the item will be removed from the Consent Agenda and placed in the appropriate corresponding Agenda Section to then be considered.

ACTION: A MOTION WAS MADE TO APPROVE THE CONSENT AGENDA AS PRESENTED.

Moved By: Ashley Stewart, seconded by Ryan Nelms
Motion Passed: (4-0)
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

2.1 Consider Approval of Work Session Meeting Minutes from March 6, 2025, Regular Scheduled Meeting Minutes from March 17, 2025, and Budget Retreat #1 Meeting Minutes from March 19, 2025

2.2 Consider Approval of the Audit Contract for FY25 with Martin Starnes and Associates CPAs, P.A.

2.3 Consider Approval of an Equivalent Residential Unit Study for Commercial Properties Through Gradient PLLC (Project# 25-105)

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3. PUBLIC HEARINGS:

3.1 Consider Approval to Recommend that the Rowan County Board of Commissioners Increase the East Landis Water District Fire Protection Tax Rate to $.0825 Cents Per $100 Valuation and Consider Approval of Corresponding Resolution #2025-04-14-2

Town Manager Michael Ambrose provided an overview of the East Landis Water District fire protection tax history and the need for an increase due to growing operational costs of the fire department. He explained that approximately 7% of the total call volume was in the East Landis district, and based on current trends, operational costs for the district would be over $100,000 by the end of the year.

ACTION: A MOTION WAS MADE TO OPEN THE PUBLIC HEARING FOR INCREASING THE EAST LANDIS WATER DISTRICT FIRE PROTECTION TAX RATE TO $.0825 CENTS PER $100 VALUATION.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

No Comments or Questions were made.

ACTION: A MOTION WAS MADE TO CLOSE THE PUBLIC HEARING FOR INCREASING THE EAST LANDIS WATER DISTRICT FIRE PROTECTION TAX RATE TO $.0825 CENTS PER $100 VALUATION.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

ACTION: A MOTION WAS MADE TO APPROVE THE RECOMMENDED INCREASE OF THE EAST LANDIS WATER DISTRICT FIRE PROTECTION TAX RATE TO $.0825 CENTS PER $100 VALUATION TO THE ROWAN COUNTY BOARD OF COMMISSIONERS AND CORRESPONDING RESOLUTION #2025-04-14-2.
Moved by: Ashley Stewart, seconded by Darrell Overcash
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

4. CITIZEN COMMENTS:

All citizen comments are limited to 3 minutes.

4.1 Citizens' Comments

- **Nadine Cherry – 410 W. Garden St. –** "Once again, I will let this Board know, you are not meeting the ADA requirements according to the paperwork that was signed by former mayors for the USDA loans the Town received back in the early 2000s. I am requesting tonight to be able to come to Town Hall to look at all the paperwork that was received from the USDA on all loans received from USDA as these were 40 year loans."

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5. ORDINANCES/RESOLUTIONS:

5.1 Consider Approval of Resolution #2025-04-14 to Request State Loan and/or Grant Assistance for Two New Water Tanks (Project 25-106)

Town Manager Michael Ambrose explained that this was an opportunity for funding through NCDEQ and a low-interest loan. He stated that the project would increase water pressure in the southern end of Landis and East Landis, as well as improve fire flows. Board members asked about the timeline for hearing back on the funding, which was estimated to be around September or October.

ACTION: A MOTION WAS MADE TO APPROVE RESOLUTION #2025-04-14 TO REQUEST STATE LOAN AND/OR GRANT ASSISTANCE FOR TWO NEW WATER TANKS (PROJECT 25-106).
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

5.2 Consider Approval of Resolution #2025-04-14-3 Opposing Changes to Local Planning and Zoning in House Bill 765 and Related Bills by the North Carolina General Assembly

Mayor Smith explained that this resolution was in response to proposed legislation that would potentially remove local control over planning and zoning decisions. She emphasized the importance of maintaining local standards and urged the board to support the resolution. Mayor Smith mentioned that she had spoken with state representatives about the issue as well.

ACTION: A MOTION WAS MADE TO APPROVE RESOLUTION #2025-04-14-3 OPPOSING CHANGES TO LOCAL PLANNING AND ZONING IN HOUSE BILL 765 AND RELATED BILLS BY THE NORTH CAROLINA GENERAL ASSEMBLY.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6. CONSIDERATIONS:

6.1 Consider Motion to Enter Closed Session Pursuant to N.C.G.S.143-318.11(a)(3)(7) For Attorney Client Privilege Regarding Criminal Investigations (20CRS000581 and 20CRSS000587)

ACTION: A MOTION WAS MADE TO ENTER CLOSED SESSION PURSUANT TO N.C.G.S.143-318.11(a)(3)(7) FOR ATTORNEY CLIENT PRIVILEGE REGUARDING CRIMINAL INVESTIGATIONS (20CRS000581 AND 20CRSS000587).
Moved by: Ashley Stewart, seconded by Darrell Overcash
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

Closed Session was held in the Executive Conference Room

ACTION: A MOTION WAS MADE TO AJOURN CLOSED SESSION.
Moved by: Darrell Overcash, seconded by Ryan Nelms
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

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6.2 Consider Approval of Request by the South Rowan Public Schools Bible Teaching Association to Assist with the "Run for the Word 5K" to be held on September 13, 2025

David Roberts, representing the South Rowan Public Schools Bible Teaching Association, presented the request for the "Run for the Word 5K" event. He explained that this was one of three major fundraisers for the association and requested the town's support in managing traffic and ensuring runner safety.

ACTION: A MOTION WAS MADE TO APPROVE THE REQUEST BY THE SOUTH ROWAN PUBLIC SCHOOLS BIBLE TEACHING ASSOCIATION TO ASSIST WITH THE "RUN FOR THE WORD 5K" TO BE HELD ON SEPTEMBER 13, 2025.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6.3 Consider Approval to Donate $1500 to Rowan County Crime Stoppers

Town Manager Michael Ambrose presented the request for a $1500 donation to Rowan County Crime Stoppers. Mayor Smith asked Police Chief Matthew Geelen to speak on the matter. Chief Geelen recommended pausing the donation this year and reconsidering it next year if requested again. He noted that the town had not received any resources from Rowan County Crime Stoppers in the last fiscal year.

ACTION: A MOTION WAS MADE TO APPROVE A $1500 DONATION TO ROWAN COUNTY CRIME STOPPERS.
Moved by: Ashley Stewart, seconded by Ryan Nelms
Motion Failed: (4-0)
Voting For: None
Voting Against: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6.4 Consider Discussion of Board Member Appointment to DC & Frances Linn Committee

Town Manager Michael Ambrose informed the Board that a position on the DC & Frances Linn Community Park Committee was currently vacant and needed to be filled by a sitting Board member. Mayor Smith noted that she already served on the committee and that one additional Board member was still needed. Alderman Stewart expressed willingness to serve but indicated his availability would be limited to the remainder of the calendar year (December 2025).

ACTION: A MOTION WAS MADE FOR ALDERMAN STEWART TO SERVE ON THE DC & FRANCES LINN COMMUNITY PARK COMMITTEE FOR THE REMAINDER OF THE CALDENAR YEAR 2025.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

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6.5 Consider Approval of South-Central Sidewalk Replacement Bid (Project 25-32)

Public Works Director Blake Abernathy presented the South-Central sidewalk replacement project, which includes removing and replacing sidewalks, curb and gutter, storm drains, ADA ramps, and installing an 18-foot parking apron along South Central from East Ryder down to Fifth Third Bank. Four bids were received, which were opened in the Town of Landis Board Room on December 2, 2024, at 2:00 pm. The bids were as follows: Yates & Funderburk: $142,435.00, LCJ Construction: $168,785.00, Greg Clark Construction: $204,600.00, Armen Construction: $257,521.00. Director Abernathy made the recommendation to award the contract for the South-Central Sidewalk Replacement to Yates & Funderburk for $142,435.00 based on their qualifications, availability, and the most competitive price. The project, if approved, is scheduled to start in June, with minimal disruption to businesses.

ACTION: A MOTION WAS MADE TO AWARD THE BID FOR THE SOUTH CENTRAL SIDEWALK REPLACEMENT PROJECT TO YATES & FUNDERBURK IN THE AMOUNT OF $142,435.00.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6.6 Consider Approval to Receive Fire House Subs Grant Funding for 80 Sections of Fire Attack Hose In The Amount Of $20,400, and Subsequent Budget Amendment #25 (Project# 25-86)

Town Manager Michael Ambrose presented the grant funding received from Fire House Subs for 80 sections of fire attack hose, totaling $20,400. He explained that this was a 100% funded grant.

ACTION: A MOTION WAS MADE TO RECEIVE THE FIRE HOUSE SUBS GRANT FUNDING FOR 80 SECTIONS OF FIRE ATTACK HOSE IN THE AMOUNT OF $20,400, AND SUBSEQUENT BUDGET AMENDMENT #25 (PROJECT 25-86).
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6.7 Consider Approval of Resolution #2025-04-14-1 to Purchase 80 Sections of Fire Hose In The Amount Of $20,400 from Newton's Fire & Safety Equipment (Project# 25-86)

Town Manager Michael Ambrose presented this item as a follow-up to agenda item 6.6, requesting authorization to purchase the 80 sections of fire attack hose from Newton's Fire & Safety Equipment using the grant funds received from Fire House Subs.

ACTION: A MOTION WAS MADE TO APPROVE RESOLUTION #2025-04-14-1 TO PURCHASE 80 SECTIONS OF FIRE ATTACK HOSE IN THE AMOUNT OF $20,400 FROM NEWTON'S FIRE & SAFETY EQUIPMENT (PROJECT# 25-86).
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

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6.8 Consider Discussion Regarding Ballistic Protective Gear for Fire Department Personnel

Mayor Smith expressed concern about the need for ballistic protective gear for firefighters, which had been pushed out to 2026 or 2027 in budget projections. Town Manager Michael Ambrose reported that the police department had sufficient ballistic gear for the fire department, which was already placed on the trucks. Fire Chief Jason Smith explained that the gear would be used for active violence calls where firefighters might need to enter a situation with police involvement. Board members discussed the practicality and necessity of the gear.

6.9 Consider Approval for Tellico Plains Rural Volunteer Fire Department in Tennessee to Purchase the 1998 Freightliner Fire Truck for $25,000 (Project# 25-107)

Town Manager Michael Ambrose presented a request from the Tellico Plains Rural Volunteer Fire Department in Tennessee to purchase the Town's 1998 Freightliner fire truck for $25,000, bypassing the current GovDeals listing.

ACTION: A MOTION WAS MADE TO APPROVE THE SALE OF THE 1998 FREIGHTLINER FIRE TRUCK FOR $25,000 TO TELLICO PLAINS RURAL VOLUNTEER FIRE DEPARTMENT (PROJECT 25-107).
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

6.10 Consider the Discussion of the NCStrap Project Status, and The Site Observation Report from Schnabel Engineering (Project 25-20)

Town Manager Michael Ambrose provided an update on the NC STRAP project at Lake Corriher Wilderness Park. He reported that Phase 1, which involved vegetation removal, has been completed using $300,000 in state funding. Phase 2 will focus on securing additional funding from the NRCS and the state to support further repairs. Lake levels will remain low until all repairs are finalized.

6.11 Consider Approval of Workers Compensation Insurance Renewal Through the NC League of Municipalities

Town Manager Michael Ambrose presented the estimated renewal cost for the Town's workers' compensation insurance through the North Carolina League of Municipalities (NCLM). Human Resources Director and Town Clerk Madison Stegall noted that NCLM had reduced its premium rates by 4.8% for the upcoming renewal period. Mayor Pro-Tem Ashley Stewart asked staff for their opinion on the quality of services provided by NCLM for workers' compensation. Manager Ambrose, with support from Director Stegall, affirmed that NCLM delivers exceptional support and service in this area.

ACTION: A MOTION WAS MADE TO APPROVE THE WORKERS' COMPENSATION INSURANCE RENEWAL THROUGH THE NC LEAGUE OF MUNICIPALITIES.
Moved by: Ashley Stewart, seconded by Darrell Overcash
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

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6.12 Consider Discussion of Love Landis Week Events for May 2nd - May 10th, 2025

Town Manager Michael Ambrose presented the plans for Love Landis Week, scheduled for May 2nd through May 10th, 2025. The week will begin with the groundbreaking ceremony for the DC & Frances Linn Community Park on May 2nd at noon and will feature a series of themed events throughout the week, including Fireman Funday on Monday, Pizza with Public Works on Tuesday, Businesses with Badges on Wednesday, Talk with Town Hall on Thursday, and Kids Fish Free Friday. Local churches are funding and sponsoring these events.

6.13 Consider Approval of Locke Lane Change Order #1 (Project 25-02)

Town Manager Michael Ambrose presented a change order from Lock Lane Construction for the sewer line project on South Main Street. The change order increase is $61,551 due to unforeseen issues encountered during the project. He noted that there may be a possibility of covering this with state ARPA funds, but currently, it would be funded through the sewer fund balance.

ACTION: A MOTION WAS MADE TO APPROVE LOCKE LANE CHANGE ORDER #1 IN THE AMOUNT OF $61,551 (PROJECT 25-02).
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

7. OLD BUSINESS:

7.1 Consider Discussion of Updates for the DC & Frances Linn Groundbreaking on May 2, 2025

Parks and Recreation Director Jessica St. Martin provided an update on preparations for the DC & Frances Linn Park groundbreaking event scheduled for May 2, 2025. She reported that a caterer has been secured, commemorative hats and shovels have been purchased, and a preliminary layout for the event has been drafted. Director St. Martin also noted that the committee has selected a 'Future Home Of' sign to be installed prior to the groundbreaking and to remain in place throughout the park's construction. The committee requested the Board's input on the placement of the sign. The proposed locations include the intersection of North Chapel Street and East Ryder Avenue, as well as a second sign on North Central Avenue, which will serve as the main entry point for the event. The Board discussed both the design and placement of the signs, including discussion regarding the visibility and appropriateness of the proposed 4x8-foot sign size.

ACTION: A MOTION WAS MADE TO APPROVE THE LOCATIONS OF THE PROPOSED FUTURE HOME SIGNS AT DC & FRANCES LINN COMMUNITY PARK TO BE LOCATED AT THE INTERSECTION OF N CHAPEL ST / E RYDER AVE AND ALONG N CENTRAL AVE.
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

DRAFT

8. REPORTS:

8.1 Departmental Reports (Included in the Board Packet)

8.2 Financial Report (Included in the Board Packet)

8.3 Town Manager Report (Included in the Board Packet)

9. UPCOMING EVENTS:

9.1 Upcoming Events (Included in the Board Packet)

- April 14th – Board of Aldermen Meeting at 6:00 PM
- April 15th – Planning Board Meeting at 6:00 PM
- April 16th – Board of Aldermen Budget Retreat from 9AM to 12PM
- April 18th – Town Offices Closed in Observance of Good Friday
- May 2nd through May 10th – Love Landis Week
- May 2nd – DC & Frances Linn Community Park Groundbreaking 12PM
- May 2nd – Downtown Cruise In 5-9 PM
- May 5th – Fireman Funday on N. Central Ave from 4-6 PM
- May 6th – Pizza with Public Works on N. Central Ave from 4-6 PM
- May 7th – Businesses with Badges on Central Ave from 4-6 PM
- May 8th – Talk with Town Hall at 312 S. Main St. from 4:30-5:30 PM
- May 8th – Board of Aldermen Work Session Meeting at 5:30PM
- May 9th – Kids Fish Free at Lake Corriher Wilderness Park from 4-6 PM
- May 10th – Shred it Event at Town Hall from 10AM-1PM
- May 12th – Board of Aldermen Meeting at 6:00 PM
- May 20th – Planning Board Meeting at 6:00 PM
- May 26th – Town Offices Closed in Observance of Memorial Day

10. CLOSING:

10.1 Board Comments

Alderman Overcash inquired about vegetation planting on the dam due to the removal from the NCStrap project. Town Manager Michael Ambrose clarified that NCDEQ does not want anything on the dam except grass, which will be planted by town staff.

10.2 Motion to Adjourn

ACTION: A MOTION WAS MADE TO AJOURN AT 7:11PM
Moved by: Ashley Stewart, seconded by Tony Corriher
Motion Passed: (4-0)
Voting For: Ashley Stewart, Tony Corriher, Ryan Nelms, Darrell Overcash

Respectfully Submitted,

_____

Madison T. Stegall, Town Clerk

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BOARD OF ALDERMEN BUDGET RETREAT #2

Wednesday, April 16, 2025 at 9:00 AM

Landis Board Room

MINUTES

PLEASE SILENCE ALL CELL PHONES

Present: Mayor Meredith Smith, Mayor Pro-Tem Ashley Stewart, Alderman Ryan Nelms, Alderman Tony Corriher, Alderman Darrell Overcash

Staff Present: Town Manager Michael Ambrose, Human Resources Director/Town Clerk Madison Stegall, Deputy Town Clerk Maddalyn Shuffler, Parks and Recreation Director Jessica St. Martin, Public Works Director Blake Abernathy

1. INTRODUCTION:

1.1 Call Meeting to Order

Mayor Meredith Smith Called the meeting to order at 9:00AM.

1.2 Welcome

Mayor Smith welcomed those in attendance.

1.3 Adoption of Agenda

ACTION: A MOTION WAS MADE TO ADOPT THE AGENDA AS PRESENTED.
Moved by: Ashley Stewart, seconded by Darrell Overcash
Motion Passed: 4-0
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

2. PRESENTATIONS:

2.1 Consider Discussion of the Results from the Raftelis Wastewater Wholesale Study (Project 25-51)

Town Manager Michael Ambrose presented the results of the Raftelis Wastewater Wholesale Study. He explained that the Town of Landis currently receives sewer treatment from the City of Salisbury under an agreement dated July 20, 1983, which was updated in 1986 and 1991. The current rate is $6.07 per 1,000 gallons of treated sewer.

Manager Ambrose stated that a study conducted by Raftelis compared rates of nearby municipalities and found that Salisbury's rate was at the higher end. The study recommended reducing the rate to $5.39 per 1,000 gallons based on operations and maintenance costs and capital investment for 2 million

gallons per day capacity. He noted that Landis only uses about 400,000 gallons per day, so the rate could potentially be even lower at $3.91 per 1,000 gallons for 1 million gallons per day capacity.
Mayor Smith provided additional context at previous meetings with Salisbury officials regarding the sewer rates. She explained that Salisbury was unwilling to adjust their rates or provide specifics on future capacity charges when asked. This has led Landis to explore other options, including working with Kannapolis on developing a system.
Mayor Smith expressed frustration that Salisbury uses the same rate study system (Raftelis) but was unwilling to run the numbers for Landis specifically when requested. She noted that unlike other municipalities served by Salisbury, Landis maintains its own sewer lines but pays the same rate.
Mayor Smith emphasized the importance of having capacity for future growth and the challenges of negotiating with Salisbury given the lack of transparency. She mentioned exploring the idea of a regional water/sewer board to give Landis more of a voice in decisions.
Manager Ambrose added that the feasibility study for a wastewater treatment facility for Landis is nearing completion, with an estimated 50-month lead time if pursued.
The board discussed the need to have a short-term plan in place with Salisbury while exploring long-term options, given the current contract expires in December 2025. Mayor Smith stated she would not support anything longer than a 5-year term, preferring a 2–3-year agreement with the option to renew. The board unanimously agreed with Mayor Smith's proposed renewal terms.

2.2 Scott Shelton and Rod Crider - Rowan County EDC

Scott Shelton and Rod Crider from the Rowan County Economic Development Commission (EDC) provided an update on their activities.
Mr. Crider outlined the EDC's three main objectives: growing existing businesses, attracting new businesses, and ensuring Rowan County is competitive for new opportunities. He presented data on job creation, capital investment, and wage goals for the past year and five-year period.
Notable accomplishments highlighted included:

- 276 new jobs created (against a goal of 500)
- $41 million in new capital investment (against a goal of $70 million)
- Average wages of $24.81/hour for new jobs

Mr. Crider discussed several major project wins over the past 5 years, including Macy's, Chewy, and Hexagon Agility. He noted that about two-thirds of leads received result in proposal submissions.
Mr. Shelton provided details on recent project submissions for Landis, particularly related to the new Landis Ridge Industrial Park. He highlighted the types of industries showing interest, including electrical components, automotive, logistics, and medical device manufacturing.
The EDC representatives discussed their focus on existing business growth, including regular company visits, manufacturing network meetings, and workforce development initiatives. They also outlined product development activities across the county to create more available sites and buildings for prospective companies.
Challenges mentioned included infrastructure needs, housing availability, childcare, and transportation. The EDC emphasized the importance of maintaining a business-friendly environment and continuing to support growth.
Mayor Smith and the board thanked the EDC for their work and discussed potential collaboration on addressing railroad crossing needs in Landis to improve access for industrial sites.

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Mayor Smith requested a 10-minute recess.

ACTION: A MOTION WAS MADE FOR A RECESS AT 9:53 AM.
Motion Moved by Darrell Overcash, seconded by Ashley Stewart
Motion Passed: 4-0
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

ACTION: A MOTION WAS MADE TO COME OUT OF RECESS AT 10:02 AM.
Motion Moved by Darrell Overcash, seconded by Ashley Stewart
Motion Passed: 4-0
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

2.3 Public Works - Public Works Director Blake Abernathy

Public Works Director Blake Abernathy provided a brief overview of the accomplishments of the Public Works and Utility Billing Departments for Fiscal Year 2025. Highlights included the implementation of inventory management systems across all departments; transitioning commercial vehicle inspections and CDL certifications in-house; securing electric service for Building 2 at Landis Ridge; increasing substation capacity from 11 MW to 14 MW; completing water and sewer line extensions to support new developments; and obtaining permits to expand lift station capacity.

Director Abernathy also outlined the department's projected needs for the next four fiscal years. For Fiscal Year 2026, he requested funding for several key pieces of equipment to support operational efficiency, including a Material Handler Bucket Truck for $298,944, a 4-Drum Pulling Rig for $182,424, a Bull Wheel Tensioner for $67,725, a Bobcat T86 Compact Track Loader for $136,059, a ¾ Ton Service Pickup Truck for $59,000, a CAT 308CR Excavator for $174,000, a Tandem Axle Dump Truck for $149,900, a Deck-Over Trailer for $20,000, and a 12-foot Shoring Box for $15,000.
Looking ahead to Fiscal Year 2027, Director Abernathy identified larger infrastructure and system-wide needs. These included a new Garbage Truck for $235,000, construction of a 33 MW Substation for $4,100,000, a GIS Mapping Study for electric and water utilities for $200,000, Tie Deliveries #2 and #3 for $500,000, Gate Valve Installations for system isolation for $5,000,000, the addition of two Elevated Storage Tanks for $6,000,000, completion of the North Chapel Street Sewer Line Extension for $1,600,000, and a Stormwater AIA Study for $1,500,000.
For Fiscal Year 2028, the department's focus shifts to further electric, wastewater, and stormwater improvements. Requested items include a 12 kV Conversion on the northwest side of town for $1,000,000, a Sewer and Stormwater GIS Mapping Study for $200,000, building or reconductoring the line to the Wastewater Treatment Facility for $500,000, removal of Lift Stations 6 and 7 with a sewer connection to the sub-regional lift station in Irish Creek for $250,000, a Pack Arm Truck for $220,000, a Directional Boring Rig for $180,000, and a major capital investment in a new Wastewater Treatment Facility for $25,000,000. Additionally, he proposed redesigning the Town's dump site at a cost of $150,000.

Director Abernathy explained that the requested equipment is essential for bringing more utility work in-house, which would reduce reliance on contractors, lower overall costs, and improve response times for repairs. He also noted that having this equipment would support employee retention by providing staff with opportunities to engage in more varied and skilled work. During the discussion, the Board considered the potential benefits of leasing some of the equipment instead of purchasing it outright. They also requested a comprehensive inventory of the Town's current vehicles, including their ages, to better assess and prioritize future replacement needs.

2.4 Parks & Recreation - Parks & Rec Director Jessica St. Martin

Parks & Recreation Director Jessica St. Martin presented an overview of the department's accomplishments for the current year, as well as its future needs. Key achievements included the installation of mini-split HVAC units in the cabins at Lake Corriher Wilderness Park, renovation of the boardwalk leading to the park office, resurfacing of the pool deck, and vegetation removal from Lake Landis Dam. Additionally, the department successfully hosted three-disc golf tournaments and implemented the Clover payment system at both the pool and the park to streamline transactions and improve customer service.

Looking ahead to Fiscal Year 2026, Director St. Martin outlined several major funding requests. These include a Campground Shower house for $90,000, $15,000 for landscaping at the entrance to Kimball Road Park, fencing around the playground at Lake Corriher Wilderness Park for $8,500, $100,000 for the installation of automatic entrance gates at the park office, campgrounds, and pool, and $15,000 for new pool awnings to enhance visitor comfort. Additional requests include $5,000 for updated trash cans throughout the park system and $16,000 to replace an aging ATV/UTV used for park operations. For Fiscal Year 2027, proposed investments focus on enhancing visitor amenities and maintaining recreational infrastructure. Requests include $15,500 for new patio furniture at the park office, $12,000 for a new lawn mower, and $80,000 to resurface the community pool. The department is also seeking $25,000 to develop a dog park and $90,000 to construct four new picnic shelters, expanding capacity for outdoor gatherings and events.

In Fiscal Year 2028, the department plans to further invest in facilities and equipment. Requests include $250,000 for the construction of a new community building, $25,000 for a custom commercial pool cover to extend the life of the pool, and $8,500 for an events trailer to support mobile programming. Additional funding needs include $40,000 for a new parks truck and $20,000 to revitalize Linn Field, including the installation of new bathrooms and dugouts.

Looking further ahead to Fiscal Year 2029, the department proposes a $300,000 investment to revitalize the South Beaver Playground and Shelter Area. This project would include refreshing the existing shelter, relocating the playground for improved access and safety, and adding a multi-sport court that accommodates tennis, pickleball, and basketball.

During the discussion, the Board considered the possibility of moving up the timeline for resurfacing the pool, which is currently scheduled for Fiscal Year 2027. Board Members also explored the idea of redesigning the entire pool area to enhance its appeal and functionality. This could include the addition of a splash pad and new picnic shelters, creating a more family-friendly and versatile recreational space for the community. The Board expressed interest in gathering community input regarding the plans for South Beaver Street Park and discussed the possibility of holding a neighborhood meeting at the location to engage residents. Additionally, Director St. Martin highlighted the importance of maintaining certain properties as recreational spaces due to requirements from past grant funding which includes South Beaver Street Park, Lake Corriher Wilderness Park, and a section of the pool property. Mayor Smith suggested that the Board take a field trip to visit some of the proposed project areas in person before finalizing budget decisions, ensuring that all perspectives are considered.

3. CLOSING:

3.1 Motion to Adjourn

ACTION: A MOTION WAS MADE TO AJOURN AT 11:49 AM.
Motion Moved by Ashley Stewart, seconded by Darrell Overcash
Motion Passed: 4-0
Voting For: Ashley Stewart, Ryan Nelms, Tony Corriher, Darrell Overcash

Respectfully Submitted,

_____

Madison T. Stegall, Town Clerk

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Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Madison Stegall, HR Director/Town Clerk

ITEM TYPE: Consideration

AGENDA SECTION: Consent Agenda

SUBJECT: **Consider Approval of Hosting OneBlood Blood Drive June 12, 2025 for the Community and Additionally Consider Employee Incentive of 4-Vacation Hours for Donating**

DETAILS:

OneBlood of the Carolinas has requested that the Town of Landis assist them with hosting a community blood drive scheduled for June 12, 2025. This event aligns closely with World Blood Donor Day, recognized on June 14, 2025.

OneBlood will provide a mobile donation bus, which will be stationed in the large adjacent parking lot next to Town Hall. The blood drive will be open to all Town employees, whether on or off duty, with department scheduling adjustments made as needed to ensure operational coverage while maximizing employee participation.

The event will also be open to the public and promoted locally through social media and other outlets to encourage broader community involvement. Each donor will receive a $20 e-gift card and a promotional item provided by OneBlood as a thank-you for their contribution.

Additionally, staff request approval to offer an incentive of four (4) hours of vacation leave to any Town employee who donates during the event. This added benefit would further encourage participation in this important, potentially life-saving effort.

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Michael D. Ambrose, Town Manager

ITEM TYPE: Presentation

AGENDA SECTION: Presentations

SUBJECT: **Consider Presentation of FY26 Budget**

DETAILS:

Consider presentation of the Fiscal Year 2026 Budget.

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Michael D. Ambrose, Town Manager

ITEM TYPE: Resolution

AGENDA SECTION: Ordinances/Resolutions

SUBJECT: **Consider Approval of Resolution #2025-05-12 to Adopt the Iredell-Rowan Hazard Mitigation Plan**

DETAILS:

RESOLUTION
ADOPTING IREDELL-ROWAN REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within the Town of Landis are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the county are particularly vulnerable to drought, extreme heat, hailstorm, hurricane and tropical storm, lightning, thunderstorm wind/high wind, tornado, winter storm and freeze, flood, hazardous material incident, and wildfire; and

WHEREAS, Rowan County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Article 5, Section 160D-501 of Chapter 160D of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five-year cycle; and

WHEREAS, the Town of Landis has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Aldermen of Landis to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Board of Aldermen of Landis hereby:

1. Adopts the Iredell-Rowan Regional Hazard Mitigation Plan.

2. Vests the Town of Landis Emergency Management with responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints Town of Landis Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the Rowan County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the 12th day of May 2025.

_____
Meredith Bare Smith, Mayor

Attest:

_____
Madison Stegall, Town Clerk

Certified by: _____ (SEAL)

Date: _____

Iredell Rowan Hazard Mitigation Plan

2025

AECOM

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SECTION 1: INTRODUCTION

This section provides a general introduction to the Iredell Rowan Regional Hazard Mitigation Plan. It consists of the following five subsections:

1.1 BACKGROUND
1.2 PURPOSE
1.3 SCOPE
1.4 AUTHORITY
1.5 SUMMARY OF PLAN CONTENTS

1.1 BACKGROUND

Natural hazards, such as thunderstorms, winter storms, tornadoes and hailstorms are a part of the world around us. Their occurrence is natural and inevitable, and there is little we can do to control their force and intensity. We must consider these hazards to be legitimate and significant threats to human life, safety, and property.

The Iredell Rowan Region is in the western Piedmont of North Carolina and includes the counties of Iredell and Rowan and the municipalities located within the counties. This area is vulnerable to a wide range of natural hazards such as thunderstorms, winter storms, tornadoes, and hailstorms. It is also vulnerable to human-caused hazards, including hazardous material spills. These hazards threaten the life and safety of residents in the Iredell Rowan Region and have the potential to damage or destroy both public and private property, disrupt the local economy, and impact the overall quality of life of individuals who live, work, and vacation in the region.

While the threat from hazardous events may never be fully eliminated, there is much we can do to lessen their potential impact upon our community and our citizens. By minimizing the impact of hazards upon our built environment, we can prevent such events from resulting in disasters. The concept and practice of reducing risks to people and property from known hazards is generally referred to as *hazard mitigation*.

Federal Emergency Management Agency (FEMA) Definition of Hazard
Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."

Hazard mitigation techniques include both structural measures (such as strengthening or protecting buildings and infrastructure from the destructive forces of potential hazards) and non-structural measures (such as the adoption of sound land use policies and the creation of public awareness programs). It is widely accepted that the most effective mitigation measures are implemented at the local government level, where decisions on the regulation and control of development are ultimately made. A comprehensive mitigation approach

addresses hazard vulnerabilities that exist today and in the foreseeable future. Therefore, it is essential that projected patterns of future development are evaluated and considered in terms of how that growth will increase or decrease a community's overall hazard vulnerability. A key component in the formulation of a comprehensive approach to hazard mitigation is to develop, adopt, and update a local hazard mitigation plan as needed. A hazard mitigation plan establishes the broad community vision and guiding principles for reducing hazard risk, and further proposes specific mitigation actions to eliminate or reduce identified vulnerabilities.

Each of the two counties and the municipal jurisdictions participating in the development of the Iredell Rowan Hazard Mitigation Plan have an existing hazard mitigation plan that has evolved over the years, as described in Section 2: *Planning Process*. This regional plan draws from each of the County plans to document the region's sustained efforts to incorporate hazard mitigation principles and practices into routine government activities and functions. At its core, the Plan recommends specific actions to minimize hazard vulnerability and protect residents from losses to those hazards that pose the greatest risk. These mitigation actions go beyond simply recommending structural solutions to reduce existing vulnerability, such as elevation, retrofitting, and acquisition projects. Local policies on community growth and development, incentives for natural resource protection, and public awareness and outreach activities are examples of other actions considered to reduce the Iredell Rowan Region's vulnerability to identified hazards. The Plan remains a living document, with implementation and evaluation procedures established to help achieve meaningful objectives and successful outcomes over time.

1.1.1 The Disaster Mitigation Act and the Flood Insurance Reform Act

To reduce the Nation's mounting natural disaster losses, the U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of DMA 2000 emphasizes the need for state, local and Tribal government entities to coordinate closely on mitigation planning activities and makes the development of a hazard mitigation plan a specific eligibility requirement for any local or Tribal government applying for federal mitigation grant funds. FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that protect life and property from future disaster damage. These programs aim to build more resilient communities by reducing the impact of disasters. There are several key HMA programs:

Hazard Mitigation Grant Program (HMGP): Provides funding to state, local, tribal, and territorial governments to develop hazard mitigation plans and rebuild in a way that reduces future disaster losses. This funding is available after a presidentially declared disaster1.

Flood Mitigation Assistance (FMA): Offers grants to states, local communities, tribes, and territories to reduce or eliminate the risk of repetitive flood damage to buildings insured under the National Flood Insurance Program (NFIP).

Building Resilient Infrastructure and Communities (BRIC): Supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards.

Communities with an adopted and federally approved hazard mitigation plan thereby become pre-positioned and more apt to receive available mitigation funds before and after the next disaster strikes. These programs help communities plan and implement long-term solutions to break the cycle of disaster damage, reconstruction, and repeated damage

This plan includes conformance with FEMA's latest Local Mitigation Planning Handbook (released May 2023) and Local Mitigation Planning Policy Guide (released April 2022, effective April 2023). A Local Hazard Mitigation Plan (HMP) Update Checklist, found in Appendix E, has been incorporated to ensure comprehensive compliance. Additionally, the Biggert Waters Flood Insurance Reform Act of 2012 modified the existing Flood Mitigation Assistance (FMA) program. One of the requirements of this Act is that a FEMA-approved Hazard Mitigation Plan is now required if communities wish to be eligible for these FEMA mitigation programs.

The Iredell Rowan Regional Hazard Mitigation Plan has been prepared in coordination with FEMA Region IV and North Carolina Emergency Management (NCEM) to ensure that the Plan meets all applicable FEMA and state requirements for hazard mitigation plans. A *Local Mitigation Plan Review Tool*, found in Appendix J, provides a summary of federal and state minimum standards and notes the location where each requirement is met within the Plan.

1.2 PURPOSE

The purpose of the Iredell Rowan Regional Hazard Mitigation Plan is to:

- Complete update of existing plans to demonstrate progress and reflect current conditions.
- Increase public awareness and education.
- Maintain grant eligibility for participating jurisdictions.
- Maintain compliance with state and federal legislative requirements for local hazard mitigation plan.

1.3 SCOPE

The focus of the Iredell Rowan Regional Hazard Mitigation Plan (HMP) is on those hazards determined to be "high" or "moderate" risks to the Iredell Rowan Region, as determined through a detailed hazard risk assessment. Other hazards that pose a "low" or "negligible" risk will continue to be evaluated during future updates to the Plan, but they may not be fully addressed until they are determined to be of high or moderate risk. This enables the participating counties and municipalities to prioritize mitigation actions based on those hazards which are understood to present the greatest risk to lives and property. The geographic scope (i.e., the planning area) for the Plan includes the counties of Iredell and Rowan, as well as their incorporated jurisdictions. **Table 1-1** indicates the participating jurisdictions.

Table 1-1: Participating Jurisdictions in the Iredell Rowan Regional Hazard Mitigation Plan

Iredell County	
Harmony	Statesville
Love Valley	Troutman
Mooresville	Davidson*
Rowan County	
China Grove	Landis
Cleveland	Rockwell
East Spencer	Salisbury
Faith	Spencer
Granite Quarry	Kannapolis*

**These jurisdictions are partially located in the planning area but are included in other HMPs. The Town of Davidson is included in the Mecklenburg County Regional Hazard Mitigation Plan and the City of Kannapolis is included in the Cabarrus Stanly Union Regional Hazard Mitigation Plan.*

1.4 AUTHORITY

This Hazard Mitigation Plan (HMP) has been/will be adopted by all participating counties in accordance with the authority and police powers granted to counties as defined by the State of North Carolina. This Hazard Mitigation Plan has also been/will be adopted by all participating incorporated municipal jurisdictions under the authority granted to cities and towns as defined by the State of North Carolina. Copies of all local resolutions to adopt the Plan are included in Appendix I. This plan has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 United States Code (U.S.C.) 5165, enacted under Section 104 of the Disaster Mitigation Act of 2000, (DMA 2000) Public Law 106-390 of October 30, 2000, as implemented at Code of Federal Regulations (CFR) 201.6 and 201.7 dated October 2007.

1.5 SUMMARY OF PLAN CONTENTS

The contents of this Plan are designed and organized to be as reader-friendly and functional as possible. While significant background information is included on the processes used and studies completed (i.e., risk assessment, capability assessment), this information is separated from the more meaningful planning outcomes or actions (i.e., mitigation strategy, mitigation action plan).

Section 2, ***Planning Process***, provides a complete narrative description of the process used to prepare the Plan. This includes the identification of participants on the planning team and describes how the public and other stakeholders were involved. It also includes a detailed summary for each of the key meetings held, along with any associated outcomes.

The ***Community Profile***, located in Section 3, provides a general overview of the Iredell Rowan Region, including prevalent geographic, demographic, and economic characteristics. In addition, building characteristics and land use patterns are discussed. This baseline information provides a snapshot of the planning area and helps local officials recognize those

social, environmental, and economic factors that ultimately play a role in determining the region's vulnerability to hazards.

The Risk Assessment is presented in two sections: Section 4, ***Hazard Identification***; and Section 5, ***Hazard Profiles***. Together, these sections serve to identify, analyze, and assess hazards that pose a threat to the Iredell Rowan Region. The risk assessment also attempts to define any hazard risks that may uniquely or exclusively affect specific areas of the Iredell Rowan Region.

The Risk Assessment begins by identifying hazards that threaten the Iredell Rowan Region. Next, detailed profiles are established for each hazard, building on available historical data from past hazard occurrences, extent, and probability of future occurrence. This section culminates in a hazard risk ranking based on conclusions regarding the frequency of occurrence, extent, and potential impact highlighted in each of the hazard profiles. In essence, the information generated through the risk assessment serves a critical function as the participating jurisdictions in the Iredell Rowan Region seek to determine the most appropriate mitigation actions to pursue and implement— enabling them to prioritize and focus their efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The ***Capability Assessment***, found in Section 6, provides a comprehensive examination of the Iredell Rowan Region's capacity to implement meaningful mitigation strategies and identifies opportunities to increase and enhance that capacity. Specific capabilities addressed in this section include planning and regulatory capability, staff and organizational (administrative) capability, technical capability, fiscal capability, and political capability. Information was obtained using a detailed survey questionnaire and an inventory and analysis of existing plans, ordinances, and relevant documents. The purpose of this assessment is to identify any existing gaps, weaknesses, or conflicts in programs or activities that may hinder mitigation efforts and to identify those activities that should be built upon in establishing a successful and sustainable local hazard mitigation program.

The *Community Profile*, *Risk Assessment*, and *Capability Assessment* collectively serve as a basis for determining the goals for the Iredell Rowan Regional Hazard Mitigation Plan, each contributing to the development, adoption, and implementation of a meaningful and manageable *Mitigation Strategy* that is based on accurate background information. The ***Mitigation Strategy***, found in Section 7, consists of broad goal statements as well as an analysis of hazard mitigation techniques for the jurisdictions participating in the Iredell Rowan Regional Hazard Mitigation Plan to consider in reducing hazard vulnerabilities. The strategy provides the foundation for a detailed ***Mitigation Action Plan***, found in Section 8, which links specific mitigation actions for each county and municipal department or agency to locally assigned implementation mechanisms and target completion dates. Together, these sections are designed to make the Plan both strategic, through the identification of long-term goals, and functional, through the identification of immediate and short-term actions that will guide day-to-day decision-making and project implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis is

placed on the use of program and damaging forces of hazards while improving the economic, social, and environmental health of the community. The concept of multi-objective planning was emphasized throughout the planning process, particularly in identifying ways to link, where possible, hazard mitigation policies and programs with complimentary community goals related to disaster recovery, housing, economic development, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety.

Plan Maintenance, found in Section 9, includes the measures that the jurisdictions participating in the Iredell Rowan Regional plan will take to ensure the Plan's continuous long-term implementation. The procedures also include the way the Plan will be regularly evaluated and updated to remain a current and meaningful planning document.

SECTION 2: PLANNING PROCESS

This section describes the planning process undertaken to develop the Iredell Rowan Regional Hazard Mitigation Plan. It consists of the following eight subsections:

2.1. Overview of Hazard Mitigation Planning

2.2. History of Hazard Mitigation Planning in The Iredell Rowan Region

2.3. Preparing the 2024 Plan

2.4. The Iredell Rowan Regional Hazard Mitigation Planning Committee (HMPC)

2.5. Community Meetings and Workshops

2.6. Involving the Public

2.7. Involving the Stakeholders

2.8. Documentation of Plan Progress

44 CFR Part 201.6(c)(1): *The plan shall include documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process and how the public was involved.*

2.1. Overview of Hazard Mitigation Planning

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. This process culminates in a hazard mitigation plan that identifies specific mitigation actions, each designed to achieve both short-term planning objectives and a long-term community vision.

To ensure the functionality of a hazard mitigation plan, responsibility is assigned for each proposed mitigation action to a specific individual, department, or agency along with a schedule or target completion date for its implementation (see Section 9: *Plan Maintenance*). Plan maintenance procedures are established for the routine monitoring of implementation progress, as well as the evaluation and enhancement of the mitigation plan itself. These plan maintenance procedures ensure that the Plan remains a current, dynamic, and effective planning document over time that becomes integrated into the routine local decision-making process.

Communities that participate in hazard mitigation planning have the potential to accomplish many

benefits, including:

- saving lives and property,
- saving money,
- speeding recovery following disasters,
- reducing future vulnerability through wise development and post-disaster recovery and reconstruction, expediting the receipt of pre-disaster and post-disaster grant funding, and demonstrating a firm commitment to improving community health and safety.

Typically, communities that participate in mitigation planning are described as having the potential to produce long-term and recurring benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that the investments made before a hazard event will significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices will enable residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

The benefits of mitigation planning go beyond solely reducing hazard vulnerability. Mitigation measures such as the acquisition or regulation of land in known hazard areas can help achieve multiple community goals, such as preserving open space, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that any local mitigation planning process be integrated with other concurrent local planning efforts, and any proposed mitigation strategies must consider other existing community goals or initiatives that will help complement or hinder their future implementation.

2.2. History of Hazard Mitigation Planning in The Iredell Rowan Region

Each of the counties and jurisdictions participating in this Plan have previously adopted the hazard mitigation plan. The list of the participating municipalities that seek approval, are listed below:

- Iredell County
    - Town of Harmony
    - Town of Love Valley
    - Town of Mooresville
    - City of Statesville
    - Town of Troutman
- Rowan County
    - Town of China Grove
    - Town of Cleveland
    - Town of East Spencer
    - Town of Faith
    - Town of Granite Quarry
    - City of Kannapolis*
    - Town of Landis
    - Town of Rockwell

- City of Salisbury
- Town of Spencer

** The City of Kannapolis, being in both Cabarrus and Rowan Counties, has chosen to participate in the Cabarrus Stanly Union Regional Hazard Mitigation Plan.*

The regional plan was developed using the multi-jurisdictional planning process recommended by the FEMA. For this plan, all the jurisdictions joined to form a regional plan. All the jurisdictions that participated in previous planning efforts participated in the development of this regional plan.

2.3. Preparing the 2024 Plan

Local hazard mitigation plans are required to be updated every five years to remain eligible for federal mitigation funding. To simplify planning efforts for the jurisdictions in the region, Iredell and Rowan Counties decided to join to create the *Iredell Rowan Regional Hazard Mitigation Plan* back in 2015. This allowed resources to be shared amongst the participating jurisdictions and eased the administrative duties of all the participants by combining the existing county plans into one multi-jurisdictional plan. To prepare the 2024 *Iredell Rowan Regional Hazard Mitigation Plan*, AECOM was hired as an outside consultant to provide professional mitigation planning services. To meet the requirements of the Community Rating System (CRS) , the region ensured that the planning process was facilitated under the direction of a professional planner. Kelly Keefe from AECOM served as the lead planner for this project. Per the contractual scope of work, the consultant team followed the mitigation planning process recommended by FEMA and recommendations provided by NCEM mitigation planning staff. The Local Mitigation Plan Review Tool, found in Appendix J, provides a detailed summary of FEMA's current minimum standards of acceptability for compliance with DMA 2000 and notes the location where each requirement is met within this Plan.

These standards are based upon FEMA's Interim Final Rule as published in the Federal Register on February 26, 2002, in Part 201 of the Code of Federal Regulations. The planning committee used FEMA's *Local Mitigation Planning Handbook* (released May 2023) for reference as they completed the Plan along with the Planning Policy Guide (effective April 2023).

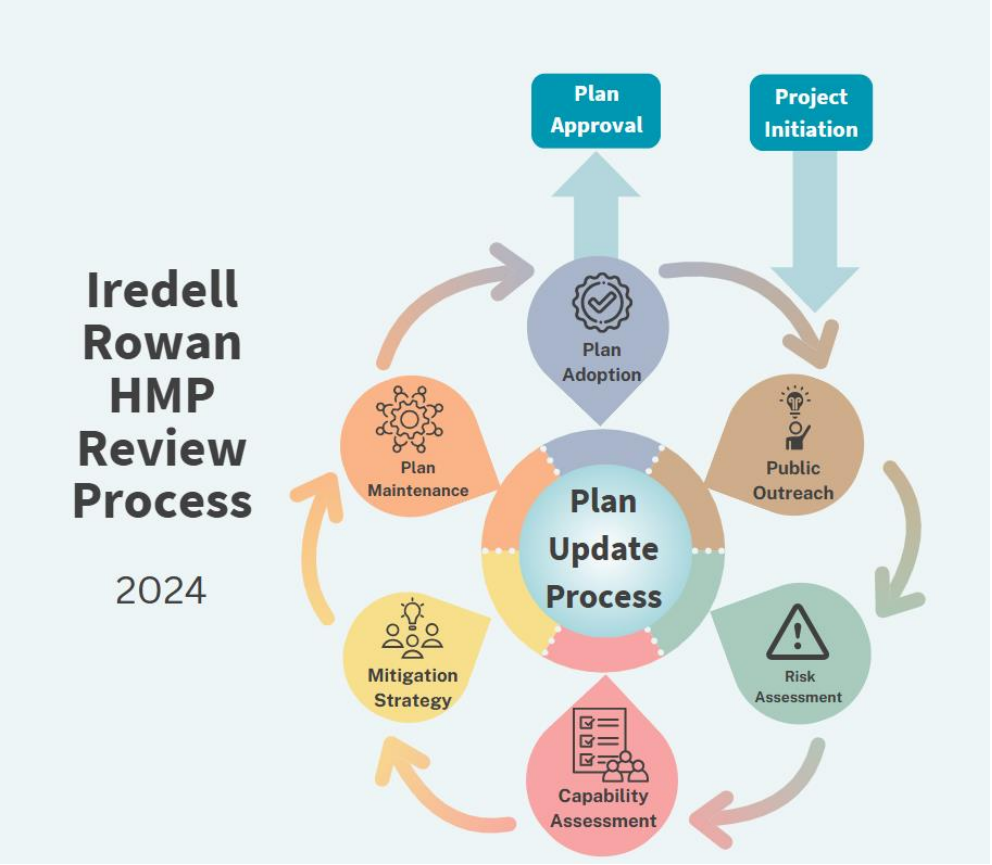


Figure 2- 1: Iredell Rowan HMP Review Process Diagram

The process used to prepare this Plan included twelve major steps that were completed over the course of approximately ten months beginning in July 2024. Each of these planning steps (illustrated in Figure 2- 1) resulted in critical work products and outcomes that collectively make up the Plan. Specific plan sections are further described in Section 1: *Introduction*.

Over the past five years, each participating jurisdiction has been actively working to implement their existing plans. This is documented in the Mitigation Action Plan through the implementation status updates for each of the Mitigation Actions. The Capability Assessment also documents changes and improvements in the capabilities of each participating jurisdiction to implement the Mitigation Strategy.

Throughout the planning process, all jurisdictions were invited to participate through email invitations to designated representatives and HMPC members listed in Table 2- 2 to virtual, in-person, and hybrid HMPC meetings described below. All jurisdictions in Table 2- 1 and listed in Section 2.4 were invited by email and contributed to the plan update process by attending scheduled meetings and were involved in the planning process by engaging and actively participating in the development of the plan. For

individuals who preferred one-on-one communication to provide input and edit plan content as the representative of the participating jurisdictions, one-on-one communications via emails and Committees virtual meetings with AECOM planners were arranged, which is also referred to as **Alternate Participation** throughout this plan. **Alternate Participation** was the preferred method of participation in the planning process for the jurisdictions indicated in Table 2- 1 and where otherwise indicated throughout the plan.

Table 2- 1: Participation Summary for jurisdictions in Iredell and Rowan Counties, including the counties themselves.

Jurisdiction	Meeting Attendance	Alternate Participation	Capabilities Assessment Update	Mitigation Actions Update	Details of Participation
Iredell County	Yes	--	Yes	Yes	**Meeting Attendance**: 4/25/2024, 6/12/2024, 8/14/2024, 9/19/2024, 10/16/2024, 1/16/2025
Town of Harmony	No	Yes	*No changes*	Yes	*Participation fulfilled through mitigation actions updates.*
Town of Love Valley	No	Yes	*No changes*	Yes	*Participation fulfilled through mitigation actions updates.*
Town of Mooresville	Yes	--	Yes	Yes	**Meeting Attendance:** 8/14/2024, 1/16/2025
City of Statesville	Yes	--	Yes	Yes	**Meeting Attendance**: 6/12/2024, 8/14/2024, 9/19/2024, 10/16/2024, 1/16/2025
Town of Troutman	Yes	--	*No changes*	Yes	**Meeting Attendance:** 11/20/2024
Rowan County	Yes	--	Yes	Yes	**Meeting Attendance**: 4/25/2024, 6/12/2024, 8/14/2024, 9/19/2024, 10/16/2024, 10/17/2024, 1/16/2025
Town of China Grove	Yes	--	Yes	Yes	**Meeting Attendance:** 6/12/2024, 1/16/2025
Town of Cleveland	Yes	--	Yes	Yes	**Meeting Attendance:** 10/17/2024
Town of East Spencer	Yes	--	Yes	Yes	**Meeting Attendance:** 11/20/2024
Town of Faith	Yes	--	Yes	Yes	**Meeting Attendance:** 10/17/2024
Town of Granite Quarry	Yes	--	Yes	Yes	**Meeting Attendance**: 6/12/2024, 8/14/2024, 9/19/2024, 11/20/2024,

Jurisdiction	Meeting Attendance	Alternate Participation	Capabilities Assessment Update	Mitigation Actions Update	Details of Participation
					1/16/2025
Town of Landis	Yes	--	Yes	Yes	**Meeting Attendance:**6/12/2024, 10/17/2024, 11/20/2024, 1/16/2025
Town of Rockwell	Yes	--	Yes	Yes	**Meeting Attendance:** 1/16/2025
City of Salisbury	Yes	--	Yes	Yes	**Meeting Attendance**: 6/12/2024, 8/14/2024, 9/19/2024
Town of Spencer	Yes	--	Yes	Yes	**Meeting Attendance**: 6/12/2024, 8/14/2024, 9/19/2024

2.4. The Iredell Rowan Regional Hazard Mitigation Planning Committee (HMPC)

To guide the development of this Plan, the participating jurisdictions created the Iredell Rowan Regional HMPC (Regional HMPC or Regional Planning Committee). The Regional HMPC represents a community-based planning committee made up of representatives from various county departments, municipalities, and other key stakeholders identified to serve as critical partners in the planning process.

Beginning in June 2024, the HMPC members engaged in regular discussions and local meetings and planning workshops to discuss and complete tasks associated with preparing the Plan. This working group coordinated all aspects of plan preparation and provided valuable input to the process. In addition to regular meetings, committee members routinely communicated and were kept informed through an e-mail distribution list. Specifically, the tasks assigned to the HMPC members included:

- participate in HMPC meetings and workshops provide best available data as required for the risk assessment portion of the Plan
- provide information that will help complete the Capability Assessment section of the plan and provide copies of any mitigation or hazard-related documents for review and incorporation into the Plan
- support the development of the Mitigation Strategy, including the design and adoption of regional goal statements
- help design and propose appropriate mitigation actions for their department/agency for incorporation into the Mitigation Action Plan
- review and provide timely comments on all study findings and draft plan deliverables
- support the adoption of the Iredell Rowan Regional Hazard Mitigation Plan

Table 2- 2 lists the members of the HMPC who were responsible for participating in the development of

the Plan.

*Table 2- 2: Primary contacts in the HMPC for the planning area. County Leads are indicated in **bold** below.*

Name	Role	Affiliation
Franklin Gover	Town Manager	China Grove
Rodney Phillips	Mayor	China Grove
Kelly Rodgers	Town Clerk	Cleveland
Rebekah Newsome	Finance Officer	Cleveland
Barbara Mallett	Mayor	East Spencer
Michael Douglas	Town Administrator	East Spencer
Randall Barger	Mayor	Faith
Brittany Barnhardt	Mayor	Granite Quarry
Jason Hord	Interim Town Manager	Granite Quarry
Lee Matney	Mayor	Harmony
Beth Jones	County Manager	Iredell County
Bradley Johnson	Transportation Director	Iredell County
Kent Greene	**Emergency Management Agency (EMA) Director/Plan Lead Coordinator**	**Iredell County**
Matthew Todd	Planning & Development Director	Iredell County
Melissa Neader	Chair	Iredell County
Rodney Harris	Asst. County Manager	Iredell County
Jason Smith	Fire Chief	Landis
Meredith Smith	Mayor	Landis
Michael Ambrose	Town Manager	Landis
Tim Meadows	Mayor	Love Valley
Curt Deaton	Fire Chief	Mooresville
Tracey Jerome	Town Manager	Mooresville
Chuck Bowman	Mayor	Rockwell
Allyson Summitt	**EMA Director/Plan Lead Coordinator**	**Rowan County**
TJ Brown	Emergency Services Deputy Chief	Rowan County
Aaron Poplin	Planner	Rowan County
Bob Parnell	Fire Chief	Salisbury
Jim Greene	City Manager	Salisbury
Karen Alexander	Mayor	Salisbury
Kelly Baker	Assistant City Manager	Salisbury
Jesse Lynn	Town Clerk	Seagrove
Anna Ward	Town Clerk	Spencer
Jonathan Williams	Mayor	Spencer
Peter Franzese	Town Manager	Spencer
Glenn Kurfees	Fire Chief	Statesville

Name	Role	Affiliation
Randall Moore	Stormwater Program Manager	Statesville
Ron Smith	City Manager	Statesville
Ron Wyatt	Town Manager	Troutman

2.4.1. Multi-Jurisdictional Participation

The Iredell Rowan Regional Multi-Jurisdictional Hazard Mitigation Plan includes two counties, and fourteen incorporated municipalities. To satisfy multi-jurisdictional participation requirements, each county and its participating jurisdictions were required to perform the following tasks:

- Participate in mitigation planning workshops.
- Identify completed mitigation projects, if applicable.
- Develop and adopt (or update) their local Mitigation Action Plan.
- Review the Mitigation Plan and provide feedback.

Each jurisdiction participated in the planning process and has developed a local Mitigation Action Plan unique to their jurisdiction by attending meetings in person and participating in reviews via electronic data exchange. Jurisdictions that were unable to attend in-person meetings designated their lead county as proxy. The County Lead Coordinators are Kent Greene for Iredell County and Allyson Summitt for Rowan County. Each jurisdiction will adopt their Mitigation Action Plan separately. This provides the means for jurisdictions to monitor and update their Plan regularly.

2.5. Community Meetings and Workshops

The preparation of this Plan required a series of meetings and workshops for facilitating discussion, gaining consensus and initiating data collection efforts with local government staff, community officials, neighboring communities and other identified stakeholders. More importantly, the meetings and workshops prompted continuous input and feedback from relevant participants throughout the drafting stages of the Plan. The following is a summary of the key meetings and community workshops held during the plan update's development. In many cases, routine discussions and additional meetings were held by local staff to accomplish planning tasks specific to their department or agency, such as the approval of specific mitigation actions for their department or agency to undertake and include in the Mitigation Action Plan.

2.5.1. Internal HMP Kickoff Meeting – April 25, 2024

This was an internal meeting held with the county leads, NCEM, and AECOM to go over the timeline of the HMP process, requirements, and next steps.

2.5.2. HMPC Meeting #1 - June 12, 2024

The kickoff meeting was held online and in-person with one hour as an internal meeting to review the HMP review and update process and one hour as an in-person, public meeting to introduce the HMP update process. The first part of the meeting started with an overview of the purpose, scope, and schedule of the review process, followed by an overview of the core planning committee, the participating jurisdictions, the HMPC, and the AECOM committee. Next, there was an overview of the HMP process including mitigation action examples, examples of what is and is not a considered HMP, minimum criteria of the planning process, and the timeline for submitting the updated plan six months before the final deadline.

The review plan update process was outlined to include a kickoff meeting, identifying a planning committee, reviewing goals and revising them as needed, reviewing hazards and revising hazard details as needed, discussing mitigation actions within the plan, discussing capabilities of the different jurisdictions, provide specific comments, scheduling a results workshop, and finally creating the draft plan. The planning committee roles were also outlined including the responsibilities of the AECOM committee and the HMPC Members and stakeholders. The HMPC members and stakeholders provide perspectives on hazard mitigation issues facing their communities and the AECOM committee is responsible for gathering input during the plan's development.

The Iredell Rowan mitigation goals from the previous HMP were discussed along with the procedures for reviewing the existing planning goals and mitigation goals. These goals for the Iredell Rowan HMP include the following:

1. providing and implementing real-time monitoring of mitigation activities
2. develop and institute systems and procedures for collecting and interpreting information
3. develop uniform guidelines and training for decision makers and managers
4. develop effective public education and awareness program
5. implement loss reduction measures and mitigation actions
6. coordinate hazard mitigation activities with emergency preparedness, response and recovery guidelines, and efforts
7. Reduce the number of deaths, injuries, and economic loss caused by natural hazards
8. Develop an understanding of the risks posed by natural and human-caused hazards and evaluate those risks by delineating susceptible areas and estimating potential losses

Next the FEMA guidance changes were reviewed including the changes to the plan update process. These were described to reflect changes in development, increases and decreases in hazard vulnerability, changes in social vulnerability and capabilities, new construction, climate change, population changes, changes in policy or regulation, involving a broad range of stakeholders, including community lifelines and other agencies that support underserved communities, building codes, and NFIP participation updates. The new stakeholder requirements were also reviewed, which include local and regional agencies that are involved with mitigation activities, agencies that regulate development, and neighboring communities. New stakeholder requirements were reviewed, including the new requirements to involve businesses, academia, private interests, and non-profit organizations which

include organizations such as disability services agencies, rural support agencies, Non-Governmental Organizations (NGOs), faith-based organizations, health and social services, and housing agencies and advocacy groups.

Next, there was an overview of the public participation component of the HMP review process, which includes public outreach using methods like surveys and online public questionnaires. To gather public input, a questionnaire will be customized for the Iredell-Rowan jurisdictions and will be sent out to the HMP committee to review and revise as needed before it will be distributed. To maintain momentum for implementing the plan, the plan maintenance procedures will be considered in future meetings, and it was recommended that update meetings are incorporated should be incorporated into already established meetings to ensure the plan is reviewed and updated on a regular basis.

The procedures for reviewing the final draft were outlined, which includes the AECOM Committee incorporating the risk information, mitigation actions, and implementation strategies from the previous tasks to compile a draft plan which will be provided to the HMPC for review and comment.

Finally, there was time for questions and an open discussion about opportunities for the plan update, obstacles, and barriers. One participant asked if there was potential to include non-natural hazards into the HMP, to which Chris Crew (NCEM) explained that this was allowed and encouraged the community to include hazards that best suit the community, but that FEMA will only look at plan sections that relate to natural hazards and mitigation actions for natural hazards. It was also noted that the NCEM would be happy to review any information included regarding the non-natural hazards and that they can be included as an annex document.

Next steps and meetings were discussed along with meeting time, date, locations, and stakeholders to invite according to new requirements for participations. Data needs were discussed, including the updating of critical facilities, repetitive loss properties, dam inundation zones, high-hazard dams, hazard specific data, data discrepancies from previous HMPs, hazard history including costs and documentation, and new mitigation projects. In addition, the attendees were asked to designate a local jurisdictional lead to serve as the primary point of contact during the review process.

2.5.3. HMPC Meeting #2 – July 9, 2024

This meeting was held online to review the elements of the HMP that need to be updated and the next steps in the planning process. To gather public input about natural hazards and to consider in the planning process, the public participation survey was shared and the HMPC were asked to distribute the link and Quick Response (QR) code to their planning area as much as possible. The goals of the public participation survey were restated and the HMPC were notified that they would be receiving the link and QR in a follow up email after the meeting.

The natural hazards and mitigation goals from the last HMP were reviewed if anyone had input on changing or adding to either the natural hazards or mitigation goals. The HMPC were also asked to participate in the planning process during the meeting by offering potential opportunities for this plan update, highlighting potential obstacles or barriers, and opportunities for feedback that may be included

in the public survey.

From this, a member of the HMPC asked if there was a way that we can help residents locate flood insurance information, and AECOM will be exploring opportunities to develop a narrative to inform the public about where flooding information is located to be included in the public survey. Another member of the HMPC asked what the word “Impact” means in the context of the public survey and stated that everyone’s definition of impact may vary slightly, suggesting that that the word needs to be changed to a more concrete word. The group agreed that the word “impacted” should be a more specific word such as “Experienced”. Finally, it was suggested that there should be a question about adding carbon monoxide detectors to the question within the survey about smoke detectors.

Finally, the data that needs to be addressed within the HMP update process was presented and includes critical facilities, repetitive loss properties data, dam inundation zones, high hazard dams, local capability assessments, comments about HMP discrepancies that can be improved, hazard history including impacts, and photos or videos of hazard mitigation projects or hazard damages. The next steps in the planning process were outlined and included designating a local jurisdictional lead to serve as the point of contact for each jurisdiction, possible stakeholders to invite, public survey suggestions, and capability assessments that are due. The next meeting date was stated before the meeting concluded.

2.5.4. HMPC Meeting #3 – August 14, 2024

This meeting was initiated to review the capabilities assessments with the HMPC. Before reviewing the capabilities assessments, the NFIP participation and current effective map dates were presented to ensure accuracy before moving forward with the presentation. The NFIP information required in the HMP was presented to the HMPC and notified that questions in the NFIP Worksheet (Due September 19, 2024) are required for compliance with FEMA HMP updates. These include the following information specific to each jurisdiction:

- NFIP Participation (more details in Appendix E)
- Adoption of NFIP Minimum Criteria
- Adoption of the latest effective Flood Insurance Rate Map (FIRM)
- Enforcement of local floodplain regulations to manage development in the floodplain
- Staff capabilities to implement the NFIP and local floodplain regulations
- How participating communities use the NFIP to reduce risk after a disaster through substantial damage and substantial improvement provisions
- New requirements for multi-jurisdictional plans were reviewed and included an explanation of
- Repetitive Loss Properties and Severe Repetitive Loss Properties.

During the meeting, attendees were encouraged to ask questions about the capabilities assessments. One participant inquired about the expectations for municipalities regarding the completion of their own assessments. It was clarified that each municipality within the planning area is required to submit its own capabilities assessment. However, if a municipality identifies that certain capabilities are adequately addressed at the county level, they may simply note “county” in their response. The

planning committee will then reference the county's input for those specific questions.

Another attendee raised a point about building evaluations, emphasizing the need to reference Substantial Damage Estimate (SDE) procedures within the capabilities assessment. It was noted that the NFIP section of the assessment addresses risk assessment, which directly informs the mitigation strategy. Additionally, a participant asked if representatives from the NC Floodplain Management Branch were involved in the process, as their expertise is crucial for completing the NFIP worksheet. In response, Randall Moore, NCEM and Carl Baker, NCEM offered to facilitate connections between HMPC members and planners from the NC Floodplain Management Branch, ensuring municipalities receive the necessary support for accurately completing the NFIP worksheet.

The county leads were asked to send out the capabilities assessments to the relevant municipalities to ensure that the correct contact information was used. The HMPC were reminded about the public participation survey that should be distributed throughout the planning area during the planning process

Finally, NCEM reiterated that the mitigation actions, which will be introduced during the planning process, are the heartbeat of the plan that each jurisdiction or municipality must update or add to themselves. Sometimes there may be cases where communities may not have the capacity to devote time to the mitigation actions and can rely on the county for the updates, but that they hope that every municipality tries to incorporate actions and update information specific to their communities. They thanked participants and urged the HMPC to complete their tasks to keep the planning process going smoothly.

To close out the meeting, the HMPC were reminded about capabilities assessment and NFIP worksheet which is due on September 19, 2024.

2.5.5. HMPC Meeting #4 – September 19, 2024

This was a virtual meeting held to discuss the mitigation actions and what municipalities were responsible for updating. The status of capability assessments was reviewed and those who had not yet completed their capability assessments were encouraged to submit them as soon as possible. Next the new stakeholder requirements were reviewed, and HMPC members were encouraged to connect the planning committee with any relevant stakeholder groups in the planning area. These requirements were described to include:

1) **Local And Regional Agencies Involved with Hazard Mitigation Activities**
2) **Agencies That Regulate Development**
3) **Neighboring Communities**
4) **Businesses, academia, and other private interests**
    a) Private utilities
    b) Dam owners
    c) Local or regional education centers
    d) Major employers
5) **Nonprofit Organizations**

a) Housing Agencies and Housing Advocacy Groups
b) Nonprofit Organizations
c) Faith-based organizations
d) Disability services agencies
e) Non-Governmental Organizations (NGOs)
f) Rural Support Agencies

Next, the mitigation actions update process was presented. This included a tutorial on how to access the mitigation actions excel sheet, what information needs to be updated, and how to filter the excel for each jurisdiction.

To gather valuable information about the planning process and potential barriers for vulnerable groups, the HMPC were given a social equity survey to complete which will provide valuable insight into potential barriers in the planning area. These results can be viewed in Section 2.6.2.

Finally, the final draft review process was outlined and the responsibilities of the HMPC were restated. The AECOM committee will incorporate risk information, mitigation actions, and implementation strategies from the previous draft plan and include recent updates from information gathered from the planning area. AECOM will eventually provide the draft plan to the planning area and the HMPC to review and provide comments on. After the AECOM Committee reviews all comments and incorporates the suggestions, where applicable, the AECOM committee will provide the draft plan to the State for final review and comment.

Next steps include finishing capabilities assessments for those jurisdictions who had not yet submitted them, HMP members finishing the social equity questionnaire, and completing mitigation action updates for each jurisdiction in the planning area by October 16, 2024.

2.5.6. HMPC Office Hours – October 16, 2024

This was an hour-long meeting which was allotted to allow members of the HMPC to ask questions about the mitigation actions and go through the mitigation action excel. This was a strictly optional meeting where jurisdictions had a designated time to ask questions, troubleshoot, or receive assistance in completing their mitigation action updates alongside AECOM planners. The jurisdictions were encouraged to attend if they had not yet submitted updated for their mitigation actions or required assistance with completing the mitigation action updates.

2.5.7. HMPC Capability Assessment Workshop – November 20, 2024

This was an hour-long virtual meeting to work with jurisdictions who had not yet submitted their capabilities assessment forms. This was an optional meeting time for anyone who required assistance with completing their capabilities assessment or required any other assistance related to the planning process. All jurisdictions in the planning area were encouraged to attend if they had overdue assignments or if they had not yet participated in any of the planning opportunities or meetings.

2.5.8. HMPC Draft Review Meeting – January 16, 2025

This meeting was held virtually to provide members of the HMPC an opportunity to review the initial draft of the HMP update and distribute to the public for an opportunity to comment. This was an optional, virtual meeting which provided the opportunity to discuss the HMP draft, the key information that should be verified and reviewed, and how to provide feedback about the draft if necessary.

2.6. Involving the Public

44 CFR Requirement
44 CFR Part 201.6(b)(1): The planning process shall include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

An important component of the mitigation planning process involved public participation. Individual citizen and community-based input provides the entire planning committee with a greater understanding of local concerns and increases the likelihood of successfully implementing mitigation actions by developing community "buy-in" from those directly affected by the decisions of public officials. As citizens become more involved in decisions that affect their safety, they are more likely to gain a greater appreciation of the hazards present in their community and take the steps necessary to reduce their impact. Public awareness is a key component of any community's overall mitigation strategy aimed at making a home, neighborhood, school, business or entire city safer from the potential effects of hazards.

Public involvement in the development of the *Iredell Rowan Regional Hazard Mitigation Plan* was sought using these methods: a public survey was given to the HMPC members to distribute to the public and copies of the draft Plan deliverables were made available for public review on county and municipal websites and at government offices and open meetings; these can be viewed in Appendix C. The public was given multiple opportunities to be involved in the development of the regional plan throughout the planning process: during the drafting stage of the Plan; and upon completion of a final draft Plan, but prior to official plan approval and adoption.

Each of the participating jurisdictions will hold public meetings before the final plan is officially adopted by the local governing bodies. These meetings will occur at different times once FEMA has granted conditional approval of the Plan. Adoption resolutions will be included in Appendix I.

2.6.1. Public Participation Survey

The HMPC was successful in getting citizens to provide input to the mitigation planning process using the *Public Participation Survey*. The *Public Participation Survey* was designed to provide an opportunity for the public to be involved in the planning process and capture data/feedback from residents of the region that might not be able to attend public meetings or participate through other means in the mitigation planning process.

Copies of the *Public Participation Survey* were distributed to the HMPC to be made available for

residents to complete at local public offices. A link to an electronic version of the survey was also posted on each county's website. A total of 63 survey responses were received, which provided valuable input for the HMPC to consider in the development of the plan update. Selected survey results are presented below.

1) Which of these natural hazards have you experienced?

Hazards	% that have experienced the hazard
Dam/Levee Failure	8.06%
Drought	59.68%
Extreme Heat	25.81%
Earthquake	19.35%
Erosion	22.58%
Flood	41.94%
Hail	62.91%
Hazardous Materials	17.74%
Hurricane	64.52%
Landslide	3.23%
Lightning	72.58%
Thunderstorm	85.48%
Tornado	38.71%
Wildfire	12.90%
Winter Weather	67.74%

2) What was the most difficult part for you in recovering from past disasters that you have experienced? The following percentages represent the number of respondents that the reported the category was the most difficult to recover from after past disasters

Impact	% reported that the impact was the most difficult to recover from
Financial	**36.51%**
Direct damage to property	**34.92%**
Emotional	**19.05%**
Long Recovery Time	**4.76%**
Other	**3.17%**
Loss of Possessions	**1.59%**

3) How concerned are you about the possibility of your community experiencing each of these natural hazards? Most respondents reported the level of concern for each hazard below with percentage of respondents who selected the level of concern:

Hazard	Most Reported this level of concern	% who reported this level of concern
Dam/Levee Failure	Not Concerned	69.84%
Drought/Extreme Heat	Somewhat Concerned	54.84%
Earthquake	Not Concerned	61.90%
Erosion	Somewhat Concerned	44.44%
Flood	Somewhat Concerned	44.44%
Hail	Somewhat Concerned	57.14%
Hazardous Materials	Somewhat Concerned	50.79%
Hurricane	Somewhat Concerned	64.52%
Landslide	Not Concerned	77.05%
Lightning	Somewhat Concerned	52.38%
Thunderstorm	Somewhat Concerned	49.21%
Tornado	Somewhat Concerned	42.86%
Wildfire	Not Concerned	42.86%
Winter Weather	Somewhat Concerned	49.21%

4) In your opinion, which of the following categories are more likely to be impacted by natural hazards in your community? Rank the community assets in order of likeliness, 1 being most likely and 6 being least likely:

Category	1	2	3	4	5	6
Cultural/Historic: Damage or loss of libraries, museums, historic properties, etc.	9.56%	1.59%	6.35%	17.46%	20.63	44.44%
Economic: Business interruptions/closures, job	17.46%	31.75%	20.63%	15.87%	9.56%	4.76%
Environmental: Damage, contamination or loss of forests, wetlands, waterways, etc.	17.46%	19.05%	20.63%	7.94%	26.98%	7.94%
Governance: Ability to maintain order and/or provide public amenities and services	6.35%	9.52%	22.22%	26.98%	12.70%	22.22%
Infrastructure: Damage/loss of roads, bridges, utilities, schools, etc.	14.29%	28.57%	14.29%	22.22%	19.05%	1.59%
People: Loss of life and/or injuries	34.92%	9.56%	15.87%	9.56%	11.11%	19.05%

5) **How important is each of the following specific community assets to you?** The majority of the respondents reported the following level of concern with the percentage of respondents:

Community Asset	Concern level	% of Respondents with this level of concern
Airports	Very Import	25.81%
Colleges/Universities	Somewhat Important	30.16%
Day Care and Elder Care Facilities	Very Important	39.68%
Emergency Operations Centers	Very Important	77.78%
Emergency Shelters	Very Important	59.68%
Fire, Police, and EMS Stations	Very Important	87.30%
Historic Buildings	Somewhat Important	39.68%
Hospitals and Medical Facilities	Very Important	80.65%
Local Businesses	Somewhat Important	43.68%
Major Roads and Bridges	Very Important	83.87%
Parks and Recreation	Neutral	31.15%
Schools (k-12)	Very Important	54.84%
Town Hall/Courthouse	Somewhat Important	33.87%

6) **Natural hazards can have a significant impact on a community, but planning for these types of events can help lessen the impacts**. The concern level of most respondents, with percentage of respondents, reported the following level concern:

Action to Prevent Damage	Majority Concern Level	% Who responded with this Concern level
Protecting Private Property	Very Important	61.29%
Protecting Critical Facilities (For example, hospitals, police stations, fire stations, etc.)	Very Important	90.16%
Preventing Development in Hazard Areas	Very Important	61.67%
Enhancing the Function of Natural Features	Somewhat Important & Very Important	41.94%
Protecting Historic and Cultural Landmarks	Somewhat Important	46.77%
Protecting and Reducing Damage to Utilities	Very Important	83.87%
Strengthening Emergency Services (For Example, Police, Emergency Medical Services, Police)	Very Important	83.87%
Promoting Cooperation Among Public Agencies, Citizens, Non-profit organizations, and Businesses	Very Important	64.52%

7) What are some steps that you and/or your local government could take to reduce or eliminate the risk of future natural hazard damages in your neighborhood?

Mitigation Action	% of Respondents who Agreed with implementing this mitigation action to reduce hazard risk
Assist Vulnerable Populations	49.21%
Education and Awareness Activities	71.43%
Elevate your home or Business	7.94%
Emergency Preparedness Kits	74.60%
Floodproof your Home or Business	33.33%
Keep Storm Drains Clean	82.54%
Protect Power Lines	90.48%
Reduce Stormwater Runoff	66.67%
Restrict Development in Floodplain Areas	79.37%
Other	7.94%

8) Several community-wide activities can reduce risk from natural hazards. Please tell us how important you think each one is for your community to consider pursuing:

Category	Not Important	Neutral	Very Important
Local Plans and Regulations (Government policies or codes that influence the way land and buildings are developed and built.)	3.23%	17.74%	79.03%
Structure and Infrastructure Projects (Modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area)	1.61%	27.42%	70.97%
Natural Systems Protection (Actions that minimize damage and losses and preserve or restore the functions of natural systems.)	1.61%	24.19%	74.19%
Education and Awareness Programs (Actions that inform and educate citizens, elected officials and property owners about hazards and potential ways to mitigate them.)	0.00%	27.42%	72.58%
Other Types of Actions (Actions that are related to mitigation in ways that make sense to the local government that do not fall into one of the categories above.)	4.92%	60.66%	34.43%

9) What are the most effective ways for you to receive information about how to make your home and neighborhood more resistant to natural hazards?

Most Effective Ways To Receive Information About Natural Hazards	Percent Of Respondents Who Agreed that the Action Was an Effective Way to Communicate
Local Government Channel	**20.97%**
Internet (Social Media)	**59.68%**

Most Effective Ways To Receive Information About Natural Hazards	Percent Of Respondents Who Agreed that the Action Was an Effective Way to Communicate
Internet (Web Pages)	**53.23%**
Mail	**48.39%**
Mobile Messages/Alerts	**69.35%**
Newspaper	**12.90%**
Public Meetings/Workshops	**35.48%**
Radio Programs	**25.81%**
Radio Ads	**14.52%**
Television News	**35.48%**
Television Ads	**9.68%**
Other	**4.84%**

10) How long have you lived in the Iredell-Rowan Region?

Period of Time	% of Respondents
Less than one year	3.17%
1-5 Years	15.87%
6-9 Years	20.63%
10-19 Years	15.87%
20 years or more	44.44%

11) Is your home in a floodplain?

a) Yes **– 3.17%**
b) No **– 82.54%**
c) I don't know **– 14.29%**

12) Do you know how to determine if your property is located in a floodplain?

a) Yes **– 70.83%**
b) No **– 29.17 %**

13) Do you have flood insurance?

a) Yes **– 3.17%**
b) No **– 90.48%**
c) I don't know **– 6.35%**

14) If you don't have flood insurance, why not?

Reason Respondent Doesn't Have Flood Insurance	% Who responded with this reason
My house is not located in a floodplain	65.57%
Flood insurance is too expensive	8.20%
I don't think it's necessary because it never floods	3.28%
I don't think it's necessary because I'm elevated or otherwise protected	8.20%
I don't think it's necessary because I have homeowners'	0%

Reason Respondent Doesn't Have Flood Insurance	% Who responded with this reason
insurance	
I've never really considered it	3.28%
Other	11.48%

15) What type of building do you live in?

Building Type	% of Respondents
Single-Family Home	88.89%
Duplex	0.00%
Apartment (3-4 more units in structure)	1.59%
Apartment (5 or more units in structure)	3.17%
Condominium	3.17%
Manufactured Home	1.59%
Other	1.59%

16) In the following list, please check the activities that you have done in your household, plan to do in the near future, have not done, or are unable to do: The following are the percent of respondents that had completed the preparedness activity

Preparedness Activity	% of Respondents who Had Participated in this Preparedness Activity
Attended meetings or received written information on natural disasters or emergency preparedness	**37.10%**
Talked with members in your household about what to do in case of a natural disaster or emergency	**71.43%**
Developed a Household Emergency Plan to decide what everyone would do in the event of a disaster	**60.32%**
Practiced a Household Emergency Plan	**29.17%**
Prepared a Disaster Supply Kit (Extra water, food, batteries, and other emergency supplies)	**38.10%**
At least one person has been trained for First Aid or Cardio-pulmonary Resuscitation (CPR)	**46.03%**
Prepared your home by installing smoke and carbon monoxide alarms on each level of the home	**98.14%**
Discussed or created a utility shutoff procedure in the event of a natural disaster	**38.10%**

A copy of the survey and a detailed summary of the survey results are provided in Appendix H.

2.6.2. Social Equity Survey

To consider social equity throughout the planning process and while reviewing capabilities, a social equity questionnaire was distributed during and after HMPC meetings to understand how to best represent the planning area in the planning process. This was to help understand how underserved communities could be included in the planning process and how the planning process could create equity in participation. By reducing barriers for participants, the planning process can better support a community approach that best represent the wide range of perspectives, preferences, and experiences of residents in the planning area. For more information about the Social Equity Survey, see Appendix G.

2.7. Involving the Stakeholders

> ***44 CFR Part 201.6(b)(2):*** *The planning process shall include an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other non-profit interests to be involved in the planning process.*

At the beginning of the planning process for the development of this plan, the project consultants worked with each of the County Emergency Management leads to initiate outreach to stakeholders to be involved in the planning process, via e-mails, phone calls, QR code survey's flyers and related meeting announcements at correlated government meetings The project consultant sent out a list of recommended stakeholders provided from FEMA Publication 386-1 titled **Getting Started: Building Support for Mitigation Planning**, in order to give these stakeholders and neighboring communities an opportunity to be on the planning committee or otherwise be involved in the planning process.

In addition to participation from a wide variety of County-level departments, additional stakeholders that were involved in the process of developing this plan and/or were invited as participants and given the chance to provide input to affect the plan's content (See Table 2- 3 or Section 2.7.1.).

In addition to the efforts described above, the HMPC encouraged more open and widespread participation in the mitigation planning process by designing and distributing via email, QR Code flyers posted in government offices, and social media advertisements, the *Public Participation Survey*. These opportunities were provided for local officials, residents, businesses, academia, neighboring jurisdictions and other private interests in the region to be involved and offer input throughout the local mitigation planning process.

Figure 2- 2: QR Code to social equity questionnaire used to inform the planning process

2.7.1. Invited Stakeholders

In the planning process, HMPC members were asked to review the new stakeholder requirements and suggest groups in their jurisdictions that could be invited to participate in the planning process. To involve a wide range of stakeholder groups, the following groups were invited

to participate in the planning process by reviewing and commenting on the HMP draft along with attending public meetings throughout the planning process.

1. **Local And Regional Agencies Involved with Hazard Mitigation Activities**
2. **Agencies That Regulate Development**
3. **Neighboring Communities**
4. **Businesses, Academia, And Other Private Interests**
5. **Nonprofit Organizations**

Table 2- 3: Stakeholders invited to public meetings. If there is no name listed with the organizations below, the organization was invited to have a representative participate in the public outreach elements of the planning process and no specific representative of the organization was contacted.

Name	Organization	Title	County	Stakeholder Type
Mark Shinkaruk	Iredell-Statesville Schools	Chief Operations Officer	Iredell	Businesses
Gina Cranford	Iredell-Statesville Schools	Safety Coordinator	Iredell	Businesses
Jamie Vance	Mitchell Community College	Assistant Director of Security	Iredell	Education
Cindy Teague	Mooresville Graded School District	Assistant To the Board	Iredell	Education
Leigh Ellington	Catawba College	Associate Vice President of Human Resources	Catawba	Education
Greg Whitfield	Mooresville Graded School District	Chair	Iredell	Education
Jeff Insley	Rowan-Cabarrus Community College	Director Of Campus Health, Safety & Security	Rowan	Education
Matthew Selves	Mitchell Community College	Director Of Safety/ Security & Energy Management	Iredell	Education
--	Rowan Salisbury Schools	--	Rowan	Education
Bob Parnell	Salisbury Emergency Management	Fire Chief	Rowan	Emergency Management
Teresa Bush	Salvation Army	Captain	Rowan	Faith Based Organizations
--	Salvation Army	--	Iredell	Faith Based Organizations
Sarah Avery	Duke Health: Lake Normal	Director	Rowan	Healthcare
--	Atrium Health	--	Iredell & Rowan	Healthcare
Ashley Teal	Iredell County Libraries	Library Program Specialist	Iredell	Libraries
--	Salvation Army of Iredell County	--	Iredell	Non-profit
--	Salvation Army of Rowan County	--	Rowan	Non-profit
--	Iredell County Parks and Recreation	--	Iredell	Parks and Recreation

Name	Organization	Title	County	Stakeholder Type
Jill Sellers	China Grove Parks and Recreation	Parks and Recreation Director	Rowan	Parks and Recreation
Todd Matthew	Iredell County Planning	Director	Iredell	Planning
Ed Muire	Rowan Planning or Community Development	Planning Director	Rowan	Planning
David Earnhardt	Rowan County Police	Captain	Rowan	Police or Sheriff's Department
Darren Campbell	Iredell County Police	Sheriff	Iredell	Police or Sheriff's Department
Ronald D. Rombs	Lincoln County Emergency Services	Director Of Emergency Services	Lincoln	Neighboring Communities
Jason Williams	Catawba County Emergency Management	Emergency Management Coordinator	Catawba	Neighboring Communities
Daniel Fox	Alexander County Emergency Management	Emergency Management Coordinator	Alexander	Neighboring Communities
Jason Burnett	Cabarrus County Emergency Management	Emergency Management Director	Cabarrus	Neighboring Communities
Keith W. Vestal	Yadkin County Emergency Management	Emergency Services Director	Yadkin	Neighboring Communities
Jason Reavis	Wilkes County Emergency Services	Emergency Services Director	Wilkes	Neighboring Communities
Joseph Ashburn	Davie County Emergency Services	Emergency Services Director	Davie	Neighboring Communities
Bradley Johnson	Iredell County Transit	Transit Director	Iredell	Transportation
Joe Crapster	Duke Energy	District Manager	Iredell & Rowan	Utilities
Jason Williams	Salisbury-Rowan Utilities	Utilities Director	Rowan	Utilities
Persida Montanez	Dominion Energy	Chief Operations Officer	Iredell & Rowan	Utilities
Gina Cranford	Iredell-Statesville Schools	Safety Coordinator	Iredell	Businesses
--	Iredell-Statesville Schools	Assistant Director of Security	Iredell	Businesses

See Appendix C for information about stakeholder invitations.

2.8. Documentation of Plan Progress

The plan document is the written record of the planning process and describes how the plan was prepared, who was involved and what activities made up the plan's development. This plan update includes documentation of the current planning process undertaken to update the plan; this documentation is detailed throughout Section 2: Planning Process.

Progress in hazard mitigation planning for the participating jurisdictions in the Iredell Rowan Region is

documented in this plan update. Since hazard mitigation planning efforts officially began in the participating counties with the development of the initial Hazard Mitigation Plans in the late 1990s and early 2000s, many mitigation actions have been completed and implemented in the participating jurisdictions. These actions will help reduce the overall risk to natural hazards for the people and property in the region. The actions that have been completed are documented in the Mitigation Action Plan found in Section 8.

In addition, community capability continues to improve with the implementation of new plans, policies and programs that help to promote hazard mitigation at the local level. The current state of local capabilities for the participating jurisdictions is captured in Section 6: *Capability Assessment*. The participating jurisdictions continue to demonstrate their commitment to hazard mitigation and hazard mitigation planning and have proven this by developing the HMPC to update the Plan and by continuing to involve the public in the hazard mitigation planning process.

SECTION 3: Community Profile

This section of the Plan provides a general overview of the Iredell Rowan Region. It consists of the following four subsections:

3.1. GEOGRAPHY AND THE ENVIRONMENT
3.2. POPULATION AND DEMOGRAPHICS
3.3. HOUSING, INFRASTRUCTURE, AND LAND USE
3.4. INFRASTRUCTURE
3.5. EMPLOYMENT AND INDUSTRY

3.1. Geography and the Environment

The Iredell Rowan Region is in the central piedmont of North Carolina. For this plan's purposes, the Iredell Rowan Region includes the two counties of Iredell and Rowan and their participating municipalities. An orientation map is provided as Figure 3- 1.

The Brushy Mountains are in the northwest corner of Iredell County and include Fox Mountain, which is the highest point of elevation in the county at 1,760 feet. Iredell County is laden with ridges, and creeks run through the valleys allowing for good irrigation. The largest manmade lake in the state, Lake Norman, extends into the southwest portion of Iredell County as well. The South Yadkin River, the lowest point in the county, runs along the Davie-Rowan County border. Rowan County is adjacent to the east side of Iredell County. The eastern border of the county is the Yadkin River, which encompasses High Rock Lake. The South Yadkin River is a tributary. Only 35 square miles of the region's total area is covered by water.

The total area of the two participating counties is presented in Table 3- 1.

County	Land Area
Iredell County	597 square miles
Rowan County	524 square miles

Table 3- 1: Total Land Areas of Participating Counties[1] [2]

The Iredell Rowan Region enjoys a moderate climate characterized by moderate winters and hot, humid summers. Temperatures in the winter months of November, December, and January through March typically range from the 30s to the low 50s. In general, the spring months see temperatures start to warm up. From March through May, temperatures have an average high of 66˚F and an average low of 50˚F. Typically, the weather is milder by mid-April and warm in June.

In the summer, afternoon showers and thunderstorms are common, and average temperatures

[1] "Iredell County, North Carolina," United States Census Bureau, n.d., https://data.census.gov/profile/Iredell_County,_North_Carolina?g=050XX00US37097.
[2] "Rowan County, North Carolina," United States Census Bureau, n.d., https://data.census.gov/profile?q=Rowan%20County,%20North%20Carolina%20Yuman; "Data.Census.Gov," n.d.

increase with afternoon highs reaching the mid to upper 80s in July and August. September and October hosts typically cooler weather that alternates between warm days and cool nights. Daytime highs are usually in the 70s and 80s during September but fall to the 50s and 60s in November. Precipitation is consistent every month with 3 to 5 inches.

Winter in this region is moderate, but extreme snowfalls do occur. About half of the days from mid-November through February have high temperatures of 50˚F or more and can even reach the 70s. Winter lows are usually at or below freezing. Snow is most common during December, January, and February with approximately 9 inches annually.

3.2. Population and Demographics

Iredell County is the largest participating county by area, and it also has the largest population. Between 2018 and 2023, Iredell County experienced growth of 25.26% whereas Rowan County experienced a 12.45% increase. Population counts from the US Census Bureau for 2018, 2021, and 2023 for both participating counties are presented in Table 3- 2**.**

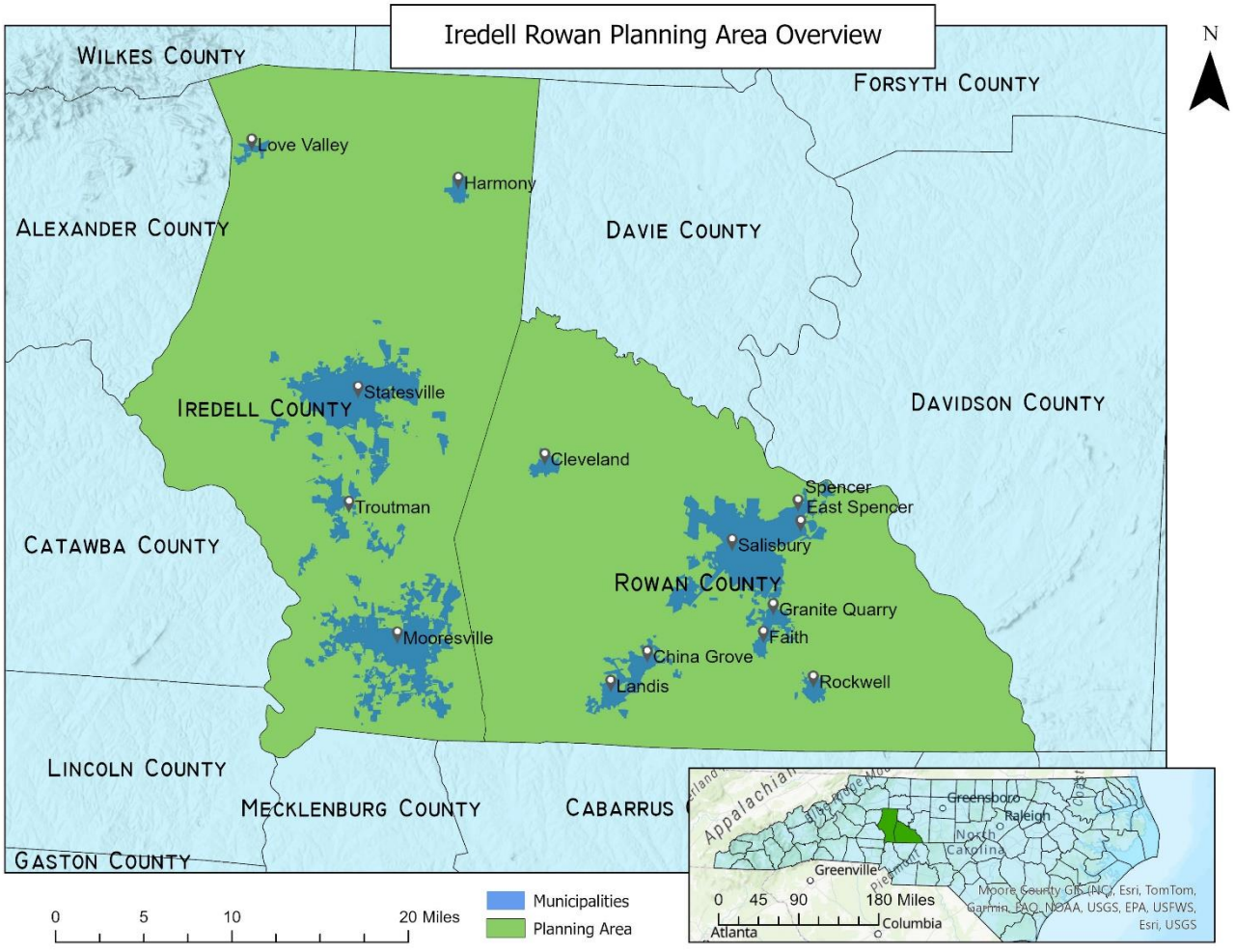
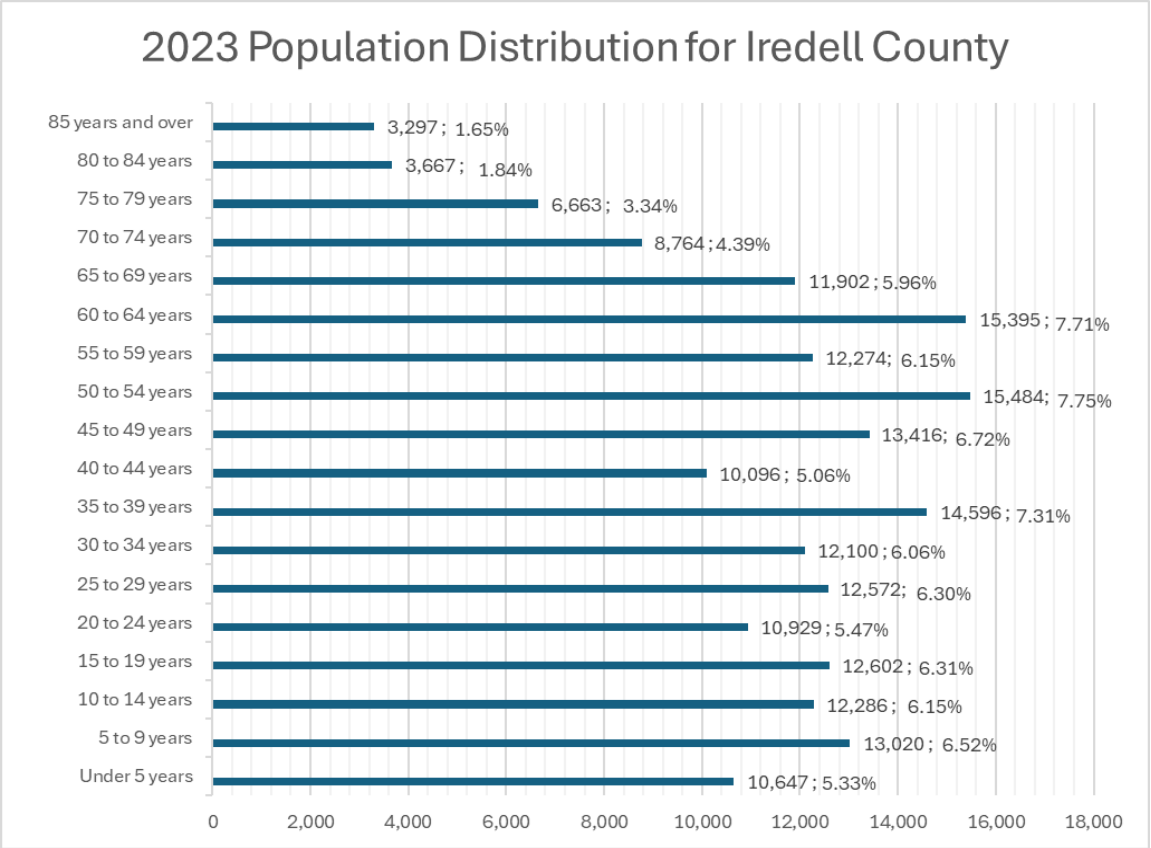


Figure 3- 1: Iredell Rowan Region Orientation. Areas in light purple around participating municipalities are considered unincorporated area

County	Jurisdiction	2018 Population[3]	2021 Population[4]	2023 Population (If available) [5]	% Change Between 2018 and 2023
Iredell	Harmony	592	536	811	36.99%
	Love Valley	97	108	155	59.79%
	Mooresville	37,165	48,431	51,477	38.51%
	Statesville	26,263	27,777	29,161	11.03%
	Troutman	2,634	3,568	3,813	44.76%
	Unincorporated	111,684	111,656	114,293	2.34%
	Total	178,435	191,968	199,710	11.92%
Rowan	China Grove	4,177	4,395	4,487	7.42%
	Cleveland	1,163	1,111	1,053	-9.46%
	East Spencer	1,537	1,243	1,309	-14.83%
	Faith	830	1,172	1,090	31.33%
	Granite Quarry	2,955	2,977	3,015	2.03%
	Kannapolis*	47,553	52,173	56,470	18.75%
	Landis	3,092	3,610	3,726	20.50%
	Rockwell	1,811	2,293	2,688	48.43%
	Salisbury	33,652	35,258	35,730	6.17%
	Spencer	3,231	3,296	3,305	2.29%
	Unincorporated Area	41,261	40,622	42,788	3.70%
	Total	141,262	148,150	155,661	10.19%
Total Planning Area		**319,697**	**340,118**	**355,371**	**11.16%**

*Table 3- 2: Population Counts for Participating Jurisdictions as of July 2023, 2021, or 2018 estimates by the American Community Survey. * The City of Kannapolis, being in both Cabarrus and Rowan Counties, has chosen to participate in the Cabarrus, Stanly Union Regional Hazards Mitigation Plan.*

[3] U.S. Census Bureau. (2018). AGE AND SEX. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101. Retrieved February 4, 2025, from https://data.census.gov/table/ACSST5Y2018.S0101.
[4] U.S. Census Bureau. (2021). AGE AND SEX. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101. Retrieved February 4, 2025, from https://data.census.gov/table/ACSST5Y2021.S0101.
[5]U.S. Census Bureau, U.S. Department of Commerce. (2023). Age and Sex. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101. Retrieved February 4, 2025, from https://data.census.gov/table/ACSST5Y2023.S0101?g=160XX00US3712480,3713000,3719860,3722600,3727440,3729640,3735200,3736860,3739420,3744220,3757340,3758860,3763760,3764740,3768500.



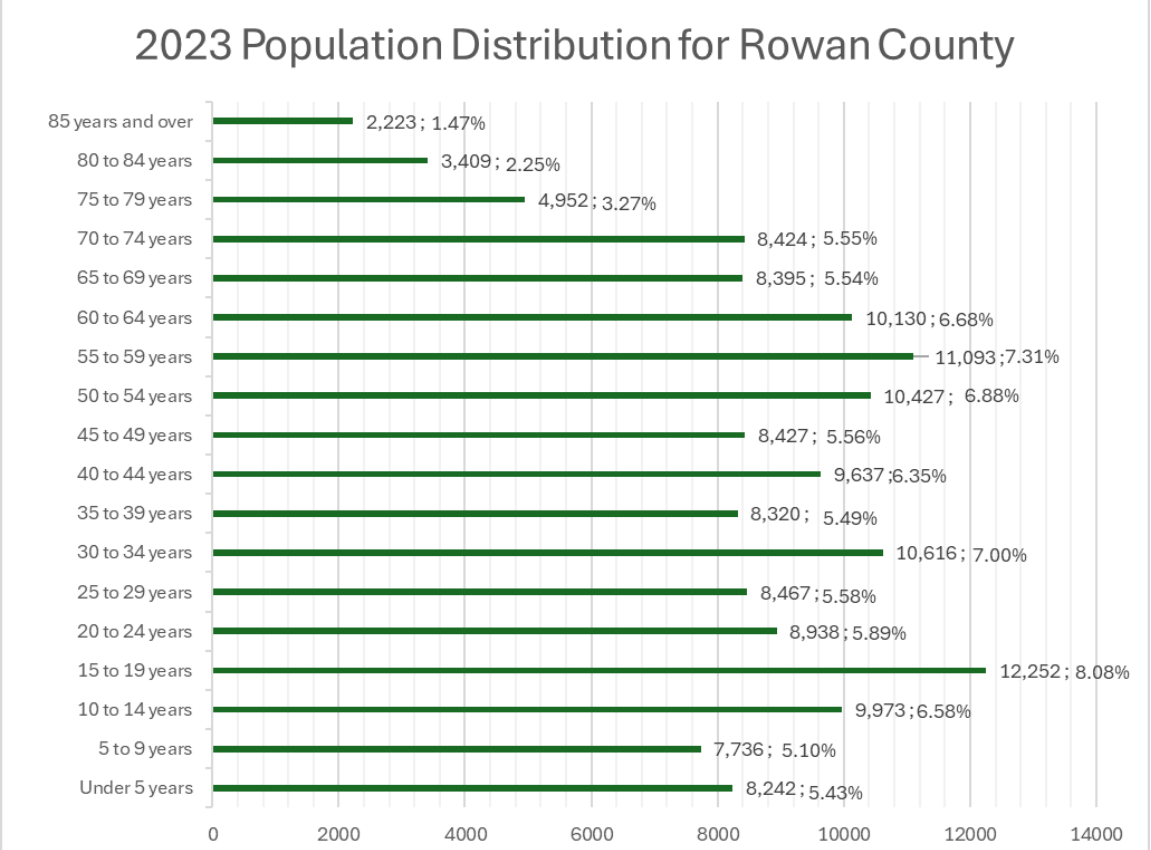


Figure 3- 2: Population Age Distributions for Iredell and Rowan County based on ACS 2023 5-year data estimates.

Based on the 2023 Census data, the median age of residents of the participating counties is between 40 and 41 years of age. The racial characteristics of the participating counties are presented in Table 3-3**.** White residents make up most of the population in the region, accounting for over 76 percent of the population in both counties. The percentage of other races represented in both counties is about equal.

Jurisdiction	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Two or More Races	Hispanic or Latino
Iredell County	81.6%	12.6%	0.6%	2.8%	0.1%	2.3%	8.8%
Rowan County	78.7%	17.2%	0.7%	1.2%	0.1%	2.1%	10.6%

Table 3- 3: Demographic composition of Participating Counties as of July 2023[6,7]. All categories are labeled as the source data is labeled.

* Hispanics may be of any race, so also are included in applicable race categories

Table 3- 4: Characteristics of Iredell and Rowan County in 2021[8].

County	Jurisdiction	American Community Survey (ACS) Selected Social Characteristics (2023)[9]					ACS Physical Housing Characteristics for Occupied Housing Units (2023)[10]		
		% Population over 65 years of age	% Population with a Disability	% Population that speaks English "less than well"	% Households with a Computer	% Households with internet	% Households without Telephone Service	% Housing Units without Complete Plumbing	% Households with No Vehicle
Iredell	**Harmony**	13.3%	13.3%	8.8%	95.0%	90.5%	3.1%	0%	0.8%
	Love Valley	20.6%	20.6%	0.0%	81.4%	67.0%	2.1%	0%	9.3%

[6] U.S. Census Bureau, U.S. Department of Commerce. (2023). ACS Demographic and Housing Estimates. *American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05*. Retrieved December 16, 2024, from https://data.census.gov/table/ACSDP5Y2023.DP05?g=050XX00US37159_040XX00US37.

[7] U.S. Census Bureau, U.S. Department of Commerce. (2023). ACS Demographic and Housing Estimates. American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05. Retrieved December 16, 2024, from https://data.census.gov/table/ACSDP5Y2023.DP05?g=050XX00US37097_040XX00US37.

[8] American Community Survey, "Selected Social Characteristics In The United States" (US Census Bureau, 2021), https://data.census.gov/table/ACSDP5YSPT2021.DP02?g=050XX00US37097,37159&d=ACS%205-Year%20Estimates%20Selected%20Population%20Data%20Profiles.

[9] U.S. Census Bureau, U.S. Department of Commerce. (2023). Selected Social Characteristics in the United States. American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP02. Retrieved February 4, 2025, from

[10] U.S. Census Bureau, U.S. Department of Commerce. (2023). Physical Housing Characteristics for Occupied Housing Units. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S2504. Retrieved February 4, 2025, from https://data.census.gov/table/ACSST5Y2023.S2504?t=Housing:Housing Units&g=160XX00US3712480,3713000,3719860,3722600,3727440,3729640,3735200,3736860,3739420,3744220,3757340,3758860,3763760,3764740,3768500.

County	Jurisdiction	American Community Survey (ACS) Selected Social Characteristics (2023)[9]					ACS Physical Housing Characteristics for Occupied Housing Units (2023)[10]		
		% Population over 65 years of age	% Population with a Disability	% Population that speaks English "less than well"	% Households with a Computer	% Households with internet	% Households without Telephone Service	% Housing Units without Complete Plumbing	% Households with No Vehicle
	Mooresville	9.1%	9.1%	3.3%	98.2%	96.5%	1%	0.1%	3.4%
	Statesville	12.5%	12.5%	9.9%	93.5%	89.8%	0.7%	0.3%	7.6%
	Troutman	8.8%	8.8%	2.1%	90.3%	89.7%	0.1%	0%	1.0%
	Iredell Total	15.8%	11.7%	3.5%	93.5%	90.4%	0.9%	0.2%	3.2%
Rowan	**China Grove**	15.2%	15.2%	9.8%	99.3%	92.2%	0%	0%	11.7%
	Cleveland	15.8%	15.8%	0.9%	90.9%	84.0%	0%	0%	5.3%
	East Spencer	41.2%	41.2%	6.4%	96.8%	84.6%	0.4%	0%	10.8%
	Faith	9.9%	9.9%	4.3%	98.4%	96.4%	0%	0%	2.3%
	Granite Quarry	13.0%	13.0%	1.6%	93.8%	88.8%	0%	0%	5.5%
	Kannapolis*	13.1%	13.1%	4.1%	89.5%	89.2%	0.7%	0.2%	5.4%
	Landis	12.5%	12.5%	4.2%	97.9%	89.3%	0%	0%	6.1%
	Rockwell	15.7%	15.7%	1.3%	91.6%	96.0%	0%	0%	2.1%
	Salisbury	15.0%	15.0%	5.6%	93.9%	85.6%	1.2%	0.5%	12.1%
	Spencer	17.0%	17.0%	0.0%	99.3%	92.7%	2.4%	0%	0%
	Rowan Total	17.4%	16.0%	3.7%	90.0%	85.3%	0.8%	0.1%	6.5%

*Table 3- 5: Summary of community characteristics that may contribute to increased hazard vulnerability. * The City of Kannapolis, being in both Cabarrus and Rowan Counties, has chosen to participate in the Cabarrus, Stanly Union Regional Hazards Mitigation Plan.*

3.2.1. Census Tract Distribution

For the purposes of this HMP, the National Risk Index (NRI) dataset has been used to represent probability of hazard occurrences (for more information about the NRI, please see Section 5.3.7.). This data is divided into census tracts and counties. Because census tracts do not always fall under a single jurisdictional boundary, so the jurisdictional boundaries (from the NC Department of Transportation (NCDOT) City Boundary Data[11]) in the planning area and census tracts are represented in the following maps to allow readers to visualize the planning area and census tract distribution:

[11] N.C. Department of Transportation [NCDOT]. (2024). NCDOT City Boundaries (By NC OneMap) [Dataset]. NCDOT.gov. https://www.nconemap.gov/maps/ee098aeaf28d44138d63446fbdaac1ee/about

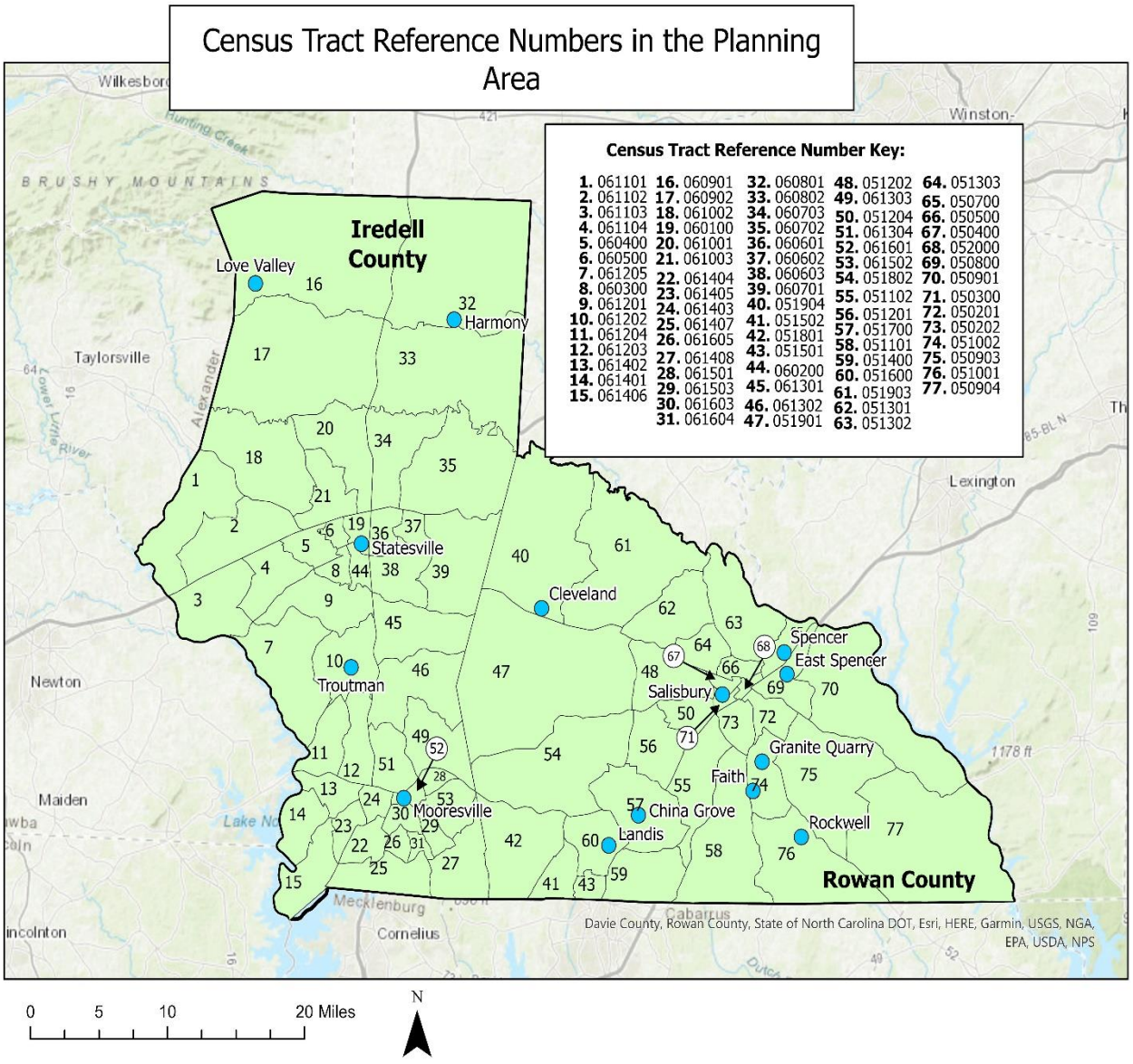


Figure 3- 3: Census tracts in the planning area

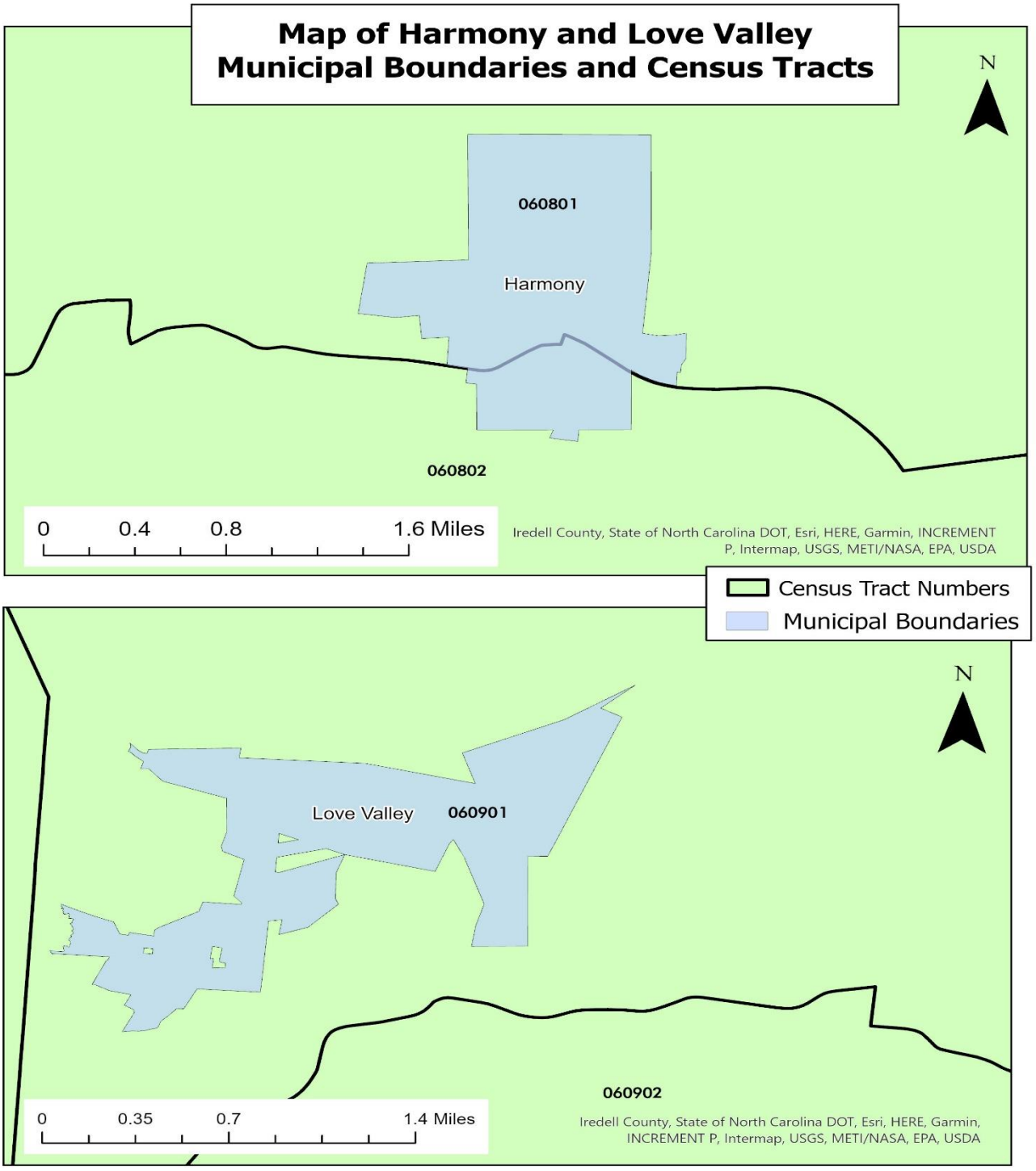


Figure 3- 4: Harmony and Love Valley Census Tract and Municipal Boundaries

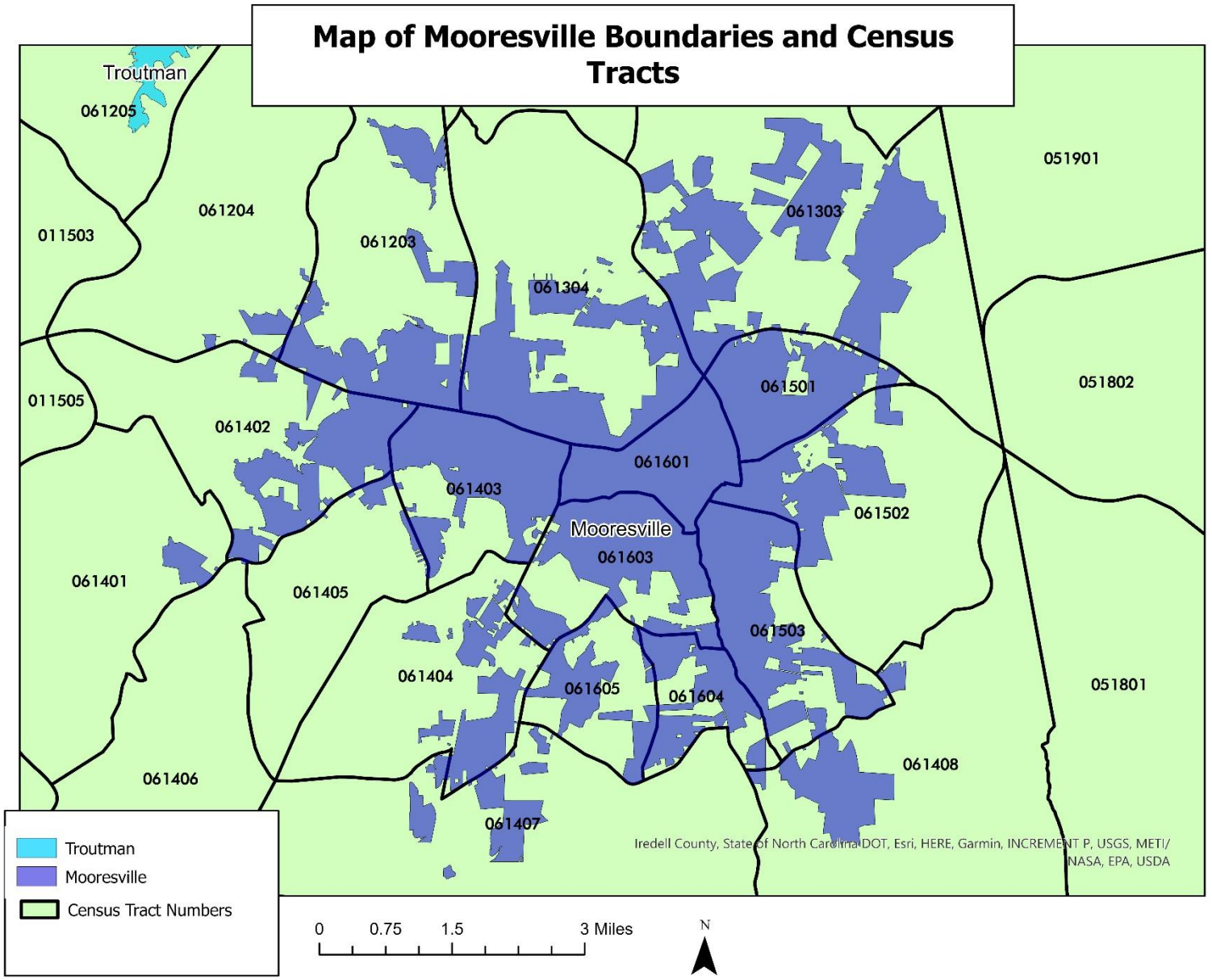


Figure 3- 5: Mooresville Census Tracts and Municipal Boundaries

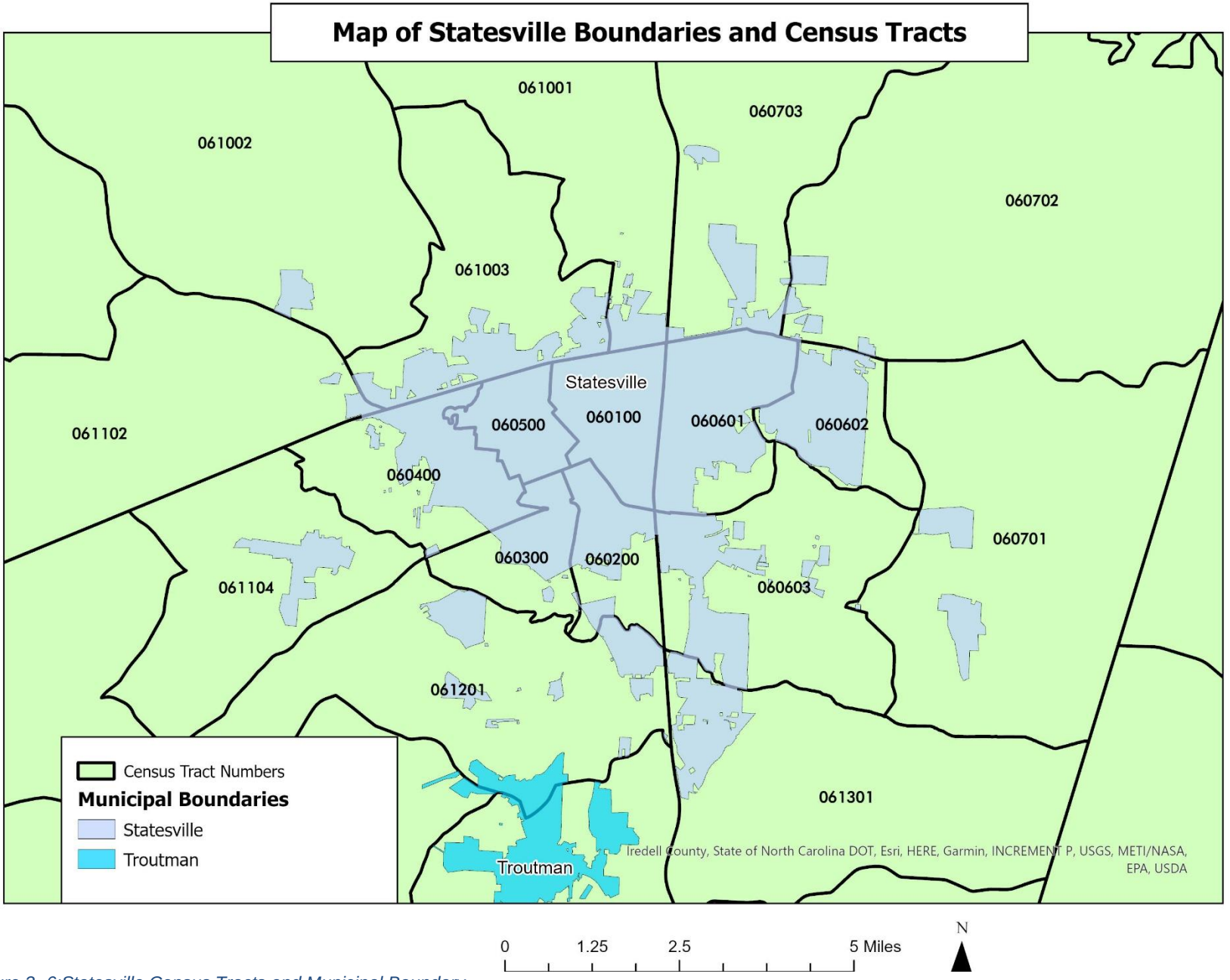


Figure 3- 6:Statesville Census Tracts and Municipal Boundary

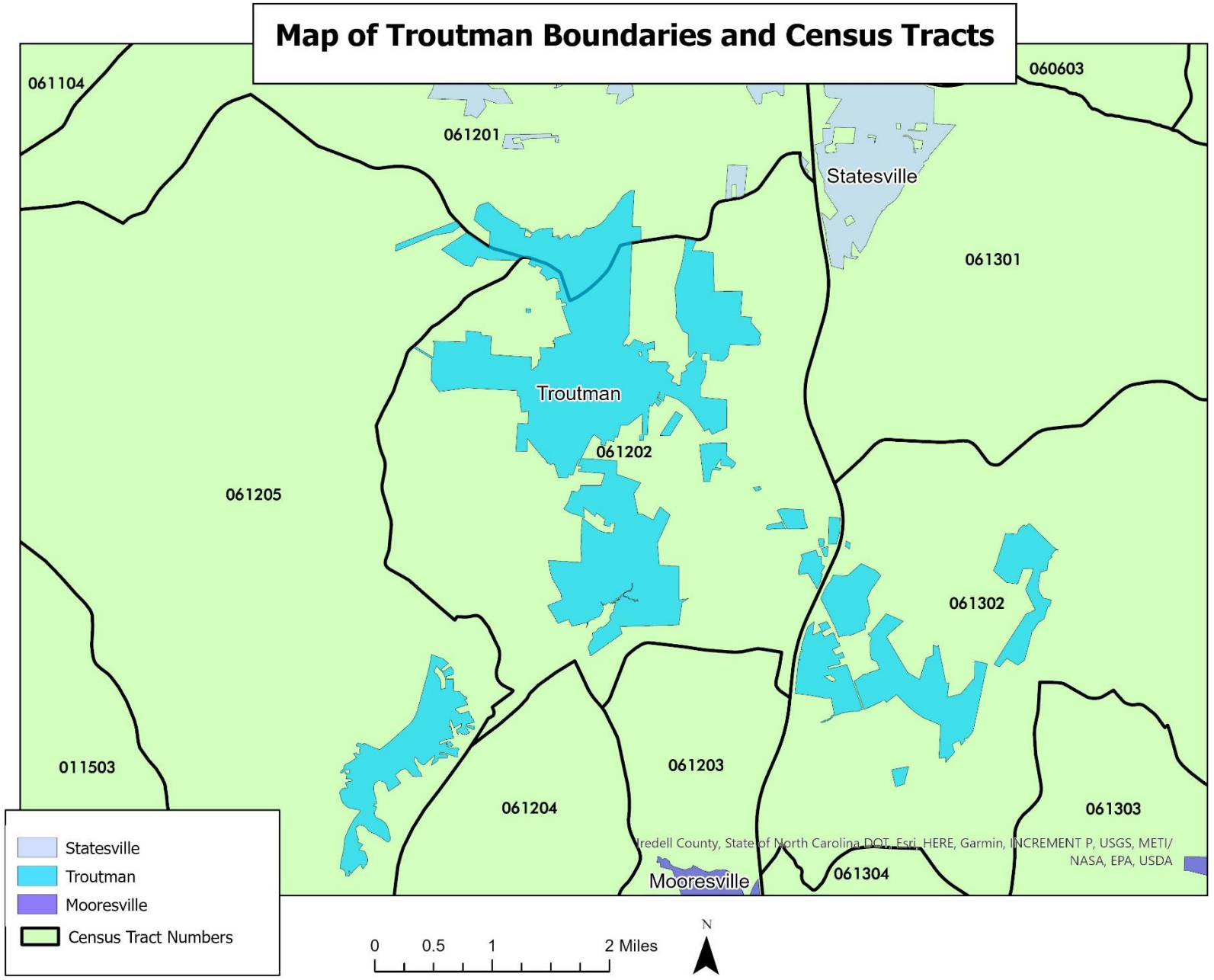


Figure 3- 7: Troutman Municipal Boundary and Census Tracts

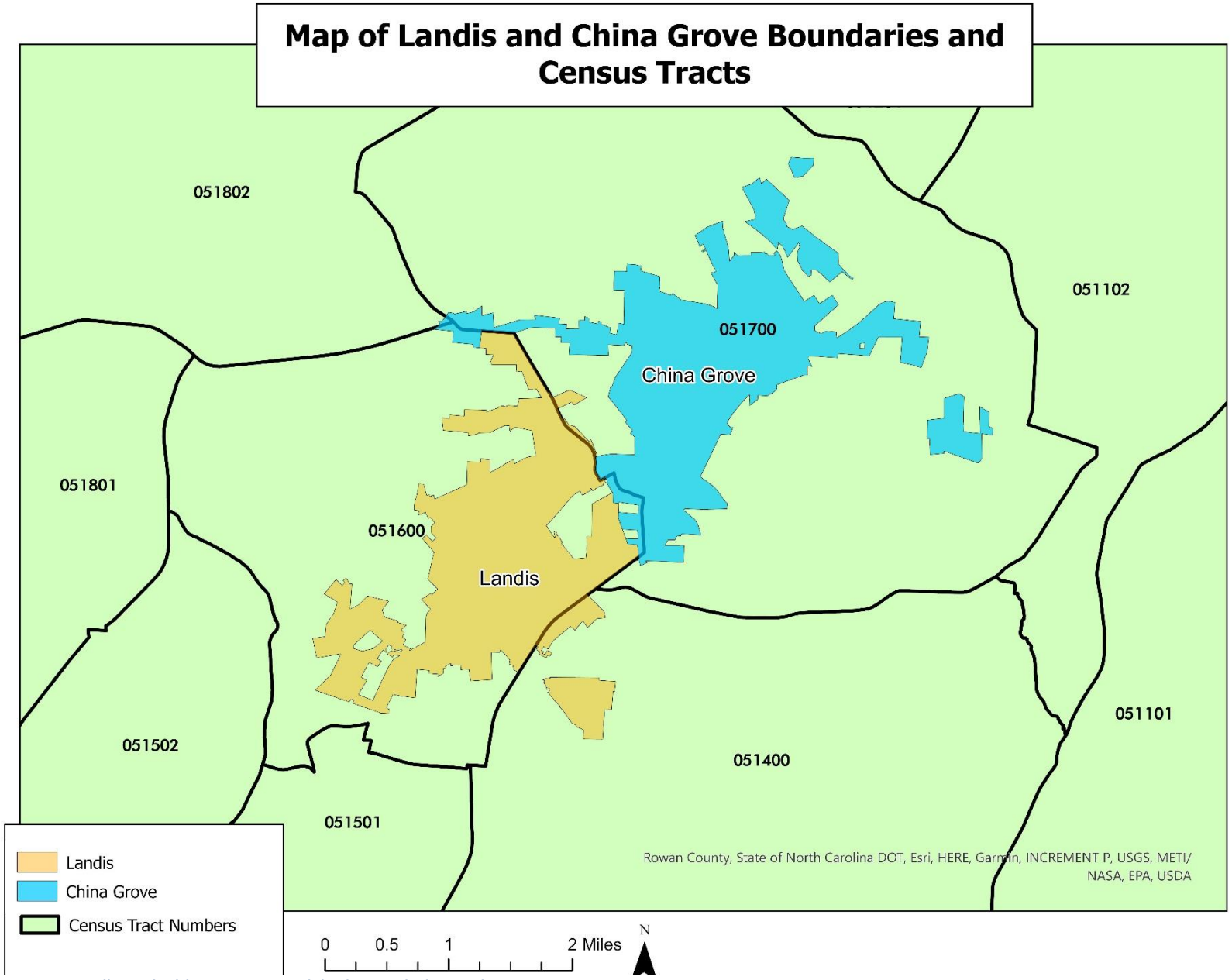


Figure 3- 8: Landis and China Grove Municipal Boundaries and Census Tracts

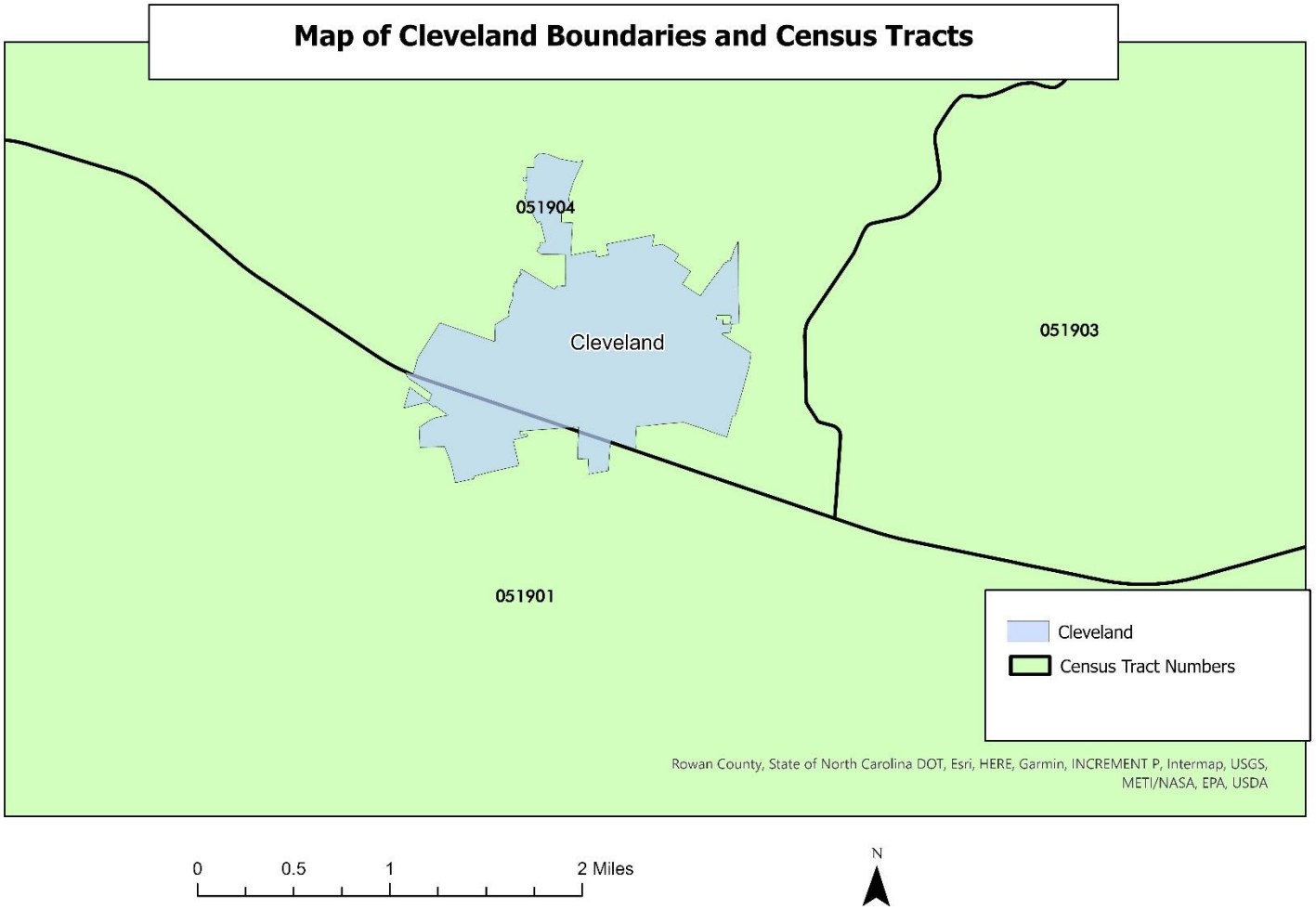


Figure 3- 9: Cleveland Municipal Boundary and Census Tracts

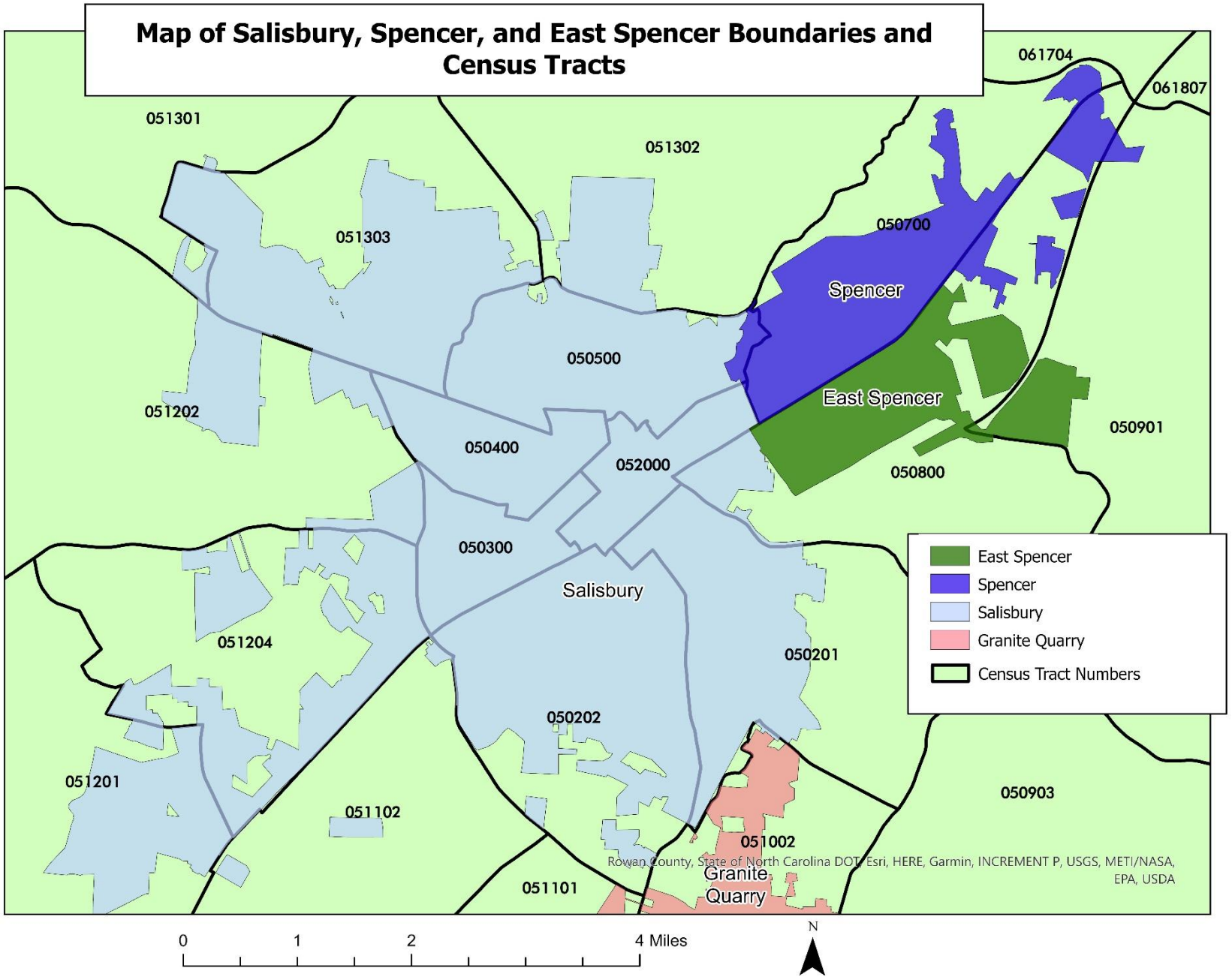


Figure 3- 10:Salisbury, East Spencer, and Spencer Municipal Boundaries and Census Tracts

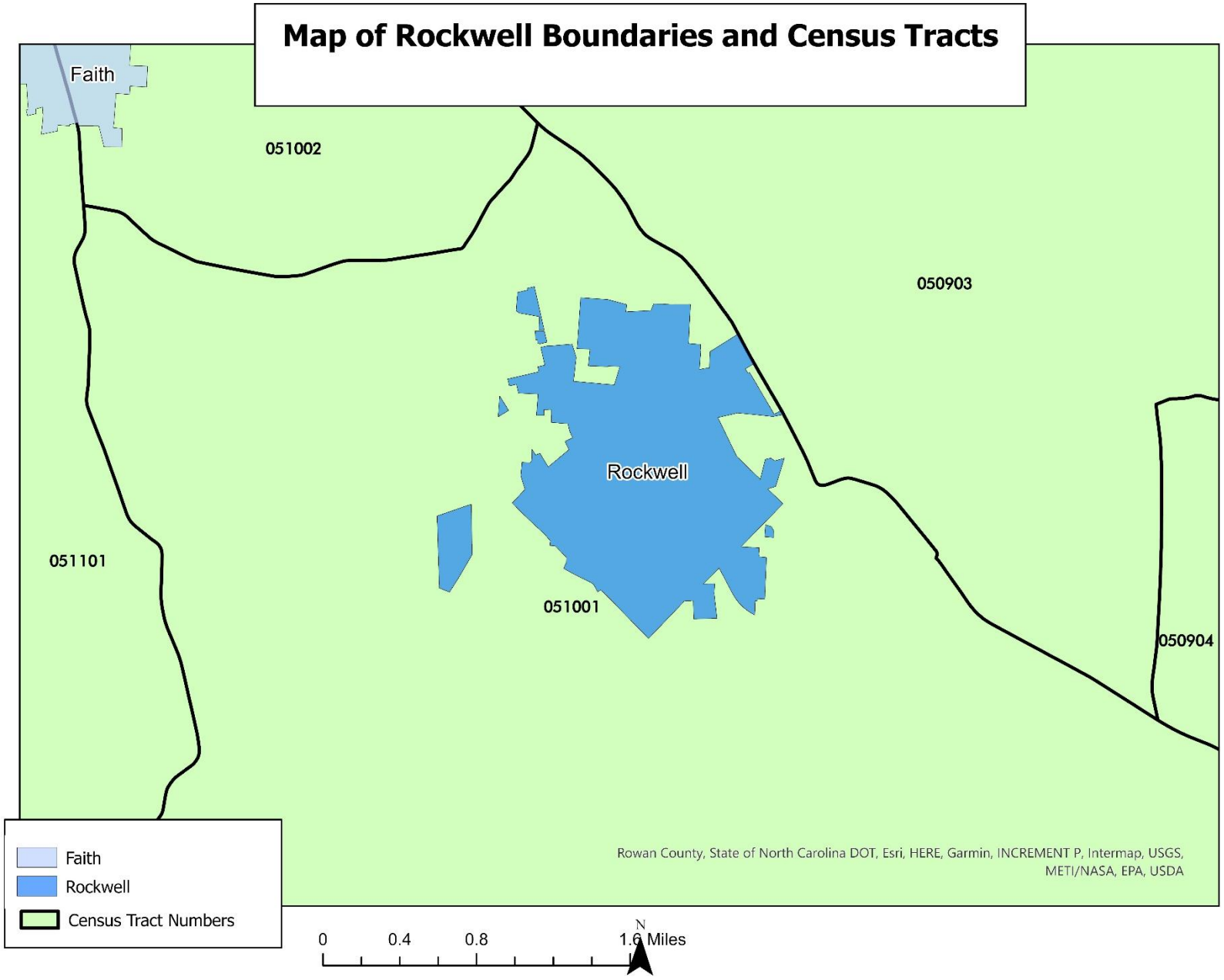


Figure 3- 12: Rockwell Municipal Boundary and Census Tracts

3.3. Housing, Infrastructure, and Land Use

3.3.1. Housing

According to the Census Bureau, there were 151,854 housing units in the Iredell Rowan Region as of July 2023, most of which are single family or mobile homes. Housing information for the participating counties is presented in

County	Housing Units that are RVs, Mobile Homes, Van, etc. (2023)	Housing Units (2018)	Housing Units (2023)	% Change between 2018 and 2023	Owner Occupied Housing	Median Value of Owner-occupied Units (2018-2022)	Median Gross Rent (2018-2022)
Iredell	12.8%	75,611	85,984	+13.72%	71.7%	$261,200	$1,105
Rowan	10.7%	61,973	65,870	+6.29%	70.7%	$187,300	$925

Table 3- 6.

County	Housing Units that are RVs, Mobile Homes, Van, etc. (2023)	Housing Units (2018)	Housing Units (2023)	% Change between 2018 and 2023	Owner Occupied Housing	Median Value of Owner-occupied Units (2018-2022)	Median Gross Rent (2018-2022)
Iredell	12.8%	75,611	85,984	+13.72%	71.7%	$261,200	$1,105
Rowan	10.7%	61,973	65,870	+6.29%	70.7%	$187,300	$925

Table 3- 6: Housing Characteristics of Participating Counties as of July 2023[12] and 2018[13] ACSs according to the US Census Bureau

[12] U.S. Census Bureau, U.S. Department of Commerce. (2023). Selected Housing Characteristics. *American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP04*. Retrieved December 16, 2024, from https://data.census.gov/table/ACSDP5Y2023.DP04?g=050XX00US37097_040XX00US37.
[13] U.S. Census Bureau. "SELECTED HOUSING CHARACTERISTICS." American Community Survey, ACS 1-Year Estimates Data Profiles, Table DP04, 2018, https://data.census.gov/table/ACSDP1Y2018.DP04?g=050XX00US37097_040XX00US37. Accessed on December 16, 2024.

3.4. Infrastructure

3.4.1. Transportation

Two major interstates run through Iredell County. Interstate 77 runs north to south and intersects Interstate 40 which runs east to west at the county seat of Statesville. There are three US highways that run through the county: 21, 64, and 70. Seven state highways also provide transportation through the county.

Interstate 85 runs southwest to northeast through Rowan County. US Route 70 enters Rowan County from Iredell County and joins with US Route 29 in the City of Salisbury. The southeastern portion of the county is served by US Route 52 which connects the Towns of Gold Hill, Rockwell, and Granite Quarry. It joins Interstate 85 before reaching Salisbury.

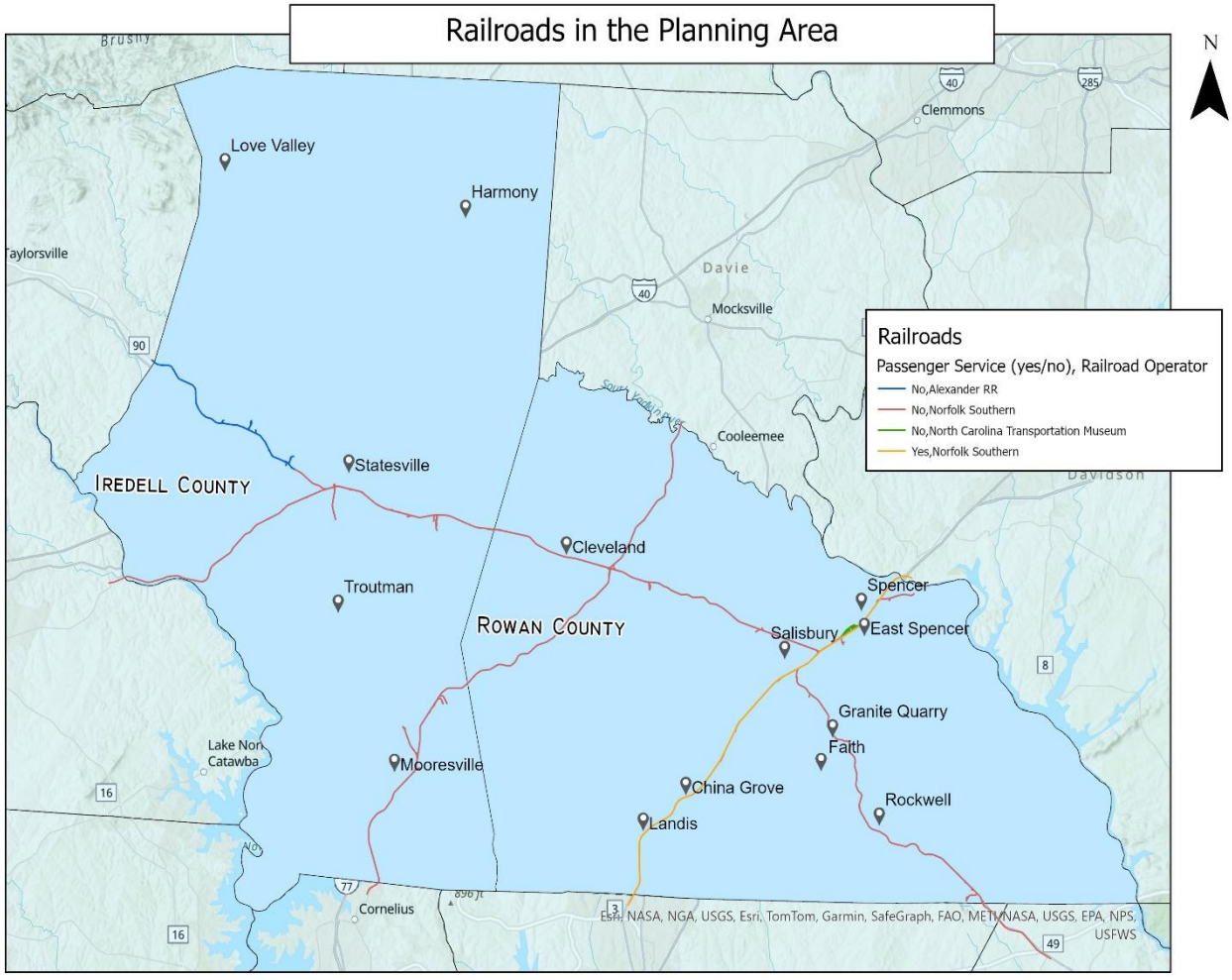


Figure 3- 13: : Railroads in the planning area, including passenger and freight routes. (Data retrieved from NC OneMap NCDOT North Carolina Railroads dataset)

The Norfolk Southern Rail and Alexander Railroad serve Iredell County, with Norfolk Southern providing freight rail service which links Statesville and Mooresville to other regional markets. The Alexander Railroad short line system connects Taylorsville and Statesville to the Norfolk Southern Railway, with 18 miles of short-line total. Rowan County is also located on the Norfolk Southern Railway, with a passenger rail station in Salisbury and Kannapolis. A map of the railroads in the planning area with identified passenger and non-passenger routes can be found in Figure 3- 13.The Charlotte Douglas International Airport is the largest airport closest to Iredell Rowan Region. It offers non-stop commercial flights on nine airlines to over 50 destinations across the eastern US and Midwest as well as to several international destinations. It is approximately 42 miles from the center of the region. Lake Norman Airpark Airport and Statesville Regional Airport provide public service to Iredell County as well as several other private airports. Rowan County Airport provides public air services to the county and region and numerous private airports. The Piedmont Triad International airport is another large airport close to the region.

3.4.2. Utilities

Electrical power in the Iredell Rowan Region is provided by one public utility and two electricity cooperatives. Duke Energy Progress provides service to both counties. The electricity cooperatives servicing the region include United Energy Cooperative in both counties and Union Power Cooperative in Rowan County. Additionally, the Town of Landis operates a municipal ElectriCities Cooperative providing electrical services for its municipality, the northernmost section of the City of Kannapolis, and a small area of Southern Rowan County adjacent to Landis.

The Iredell Water Corporation provides water and sewer service to the northern part of Iredell County south of the county seat, Statesville. It is a membership-owned, non-profit organization. The West Iredell Water Company services the other part of the county. Foothills Water and Sewer Inc. and Energy United Water Company also provide service in the county. Three municipalities, Statesville, Mooresville, and Troutman, provide water service for their citizens. The Salisbury-Rowan Utilities Department provides water and wastewater services to the municipalities of China Grove, East Spencer, Faith, Granite Quarry, Rockwell, Salisbury, and Spencer in Rowan County. The Town of Cleveland provides their own water and wastewater services. The residents of the Town of Landis are served by two entities, the City of Kannapolis, and the Salisbury-Rowan Utilities Department.

3.4.3. Community Facilities

There are several public buildings and community facilities located throughout the Iredell Rowan Region. According to NC One Map[14], there are 5 hospitals in the planning area, one of which is a VA Hospital. The largest is Novant Health Rowan Medical Center, a 203-bed short term acute center with 17 operating rooms located in the City of Salisbury. The Iredell Memorial Hospital in Statesville, Lake Norman Regional Medical Center in Mooresville, and Davis Regional Medical Center also in Statesville are three additional short-term acute centers with 199 beds, 123 beds, and 102 beds, respectively.

[14] NC One Map, “Hospitals” (nconemap.gov: NC One Map, March 22, 2023).

There is also a veterans' hospital in Rowan County, W.G. Hefner Salisbury VA Medical Center.

According to NC One Map Data[15], The Iredell Rowan Region has 20 Law Enforcement Locations, 46 Locations that provide Emergency Medical Services, 77 fire departments, 77 potential emergency shelters, 196 healthcare facilities, and 37 nursing homes (see Appendix F).

The Iredell Rowan Region contains eight parks and recreation areas. Iredell County has three parks, and Rowan has five parks for public use. Rowan County is home of the N.C. Transportation Museum and Dan Nicholas Park. Three academic institutions are also located there, Catawba College, Livingstone College, and Rowan-Cabarrus Community College. Mitchell Community College is in Iredell County.

3.4.4. Current and Future Land Use

Many areas of the Iredell Rowan Region are still rural; however, as the population grows, development is expanding and there is less farming. Currently, farmland still represents a substantial portion of the total region land base 88.89% of zoning in Rowan County attributed to Rural Agriculture, and 75.74% of land in Iredell County attributed to Residential Agriculture (See Table 3- 7 and Table 3- 8).

As shown in Figure 3- 1 above, there are five incorporated municipalities located in Iredell County and nine smaller municipalities in Rowan County, and these areas are where the region's population is concentrated. The incorporated areas are also where many businesses, commercial uses, and institutional uses are located. Land uses in the study area's balance are rural residential development, agricultural uses, recreational areas, and forestland.

In Iredell County residential zoning comprises 22.44% of all land use, which includes multi-family residential, rural residential, resort residential, and single family residential. The majority of the land, according to zoning designations, is attributed to agriculture, comprising 75.74% of total land zoning which is represented as residential agriculture. Less significant land cover types include business (0.88%), industrial (0.86%), and planned development (0.13%).

Rowan County attributes a significantly lower portion of zoning to residential land at 5.94%, which includes manufactured home parks, multifamily residential, residential suburban, and rural residential. The primary land zoning type in Rowan County is Agriculture, which includes rural agriculture related zoning types, and comprise 88.89% of the land. Business and Industry represent 2.53% and 5.06% of the total zoning, respectively.

[15] NC One Map, "Law Enforcement Locations" (nconemap.gov: NC One Map, March 22, 2023), https://www.nconemap.gov/datasets/99618bd65ab04dd2b0a6b0cd896e7113_1/explore; NC One Map, "Hospitals"; "Medical Facilities" (nconemap.gov: NC One Map, March 22, 2023), https://www.nconemap.gov/datasets/bb3150b20e3b40749fe509ed4d10e0ba_2/explore; Adam Blythe, "NC Fire Stations" (nconemap.gov: NC One Map, September 10, 2024), https://www.nconemap.gov/search?groupIds=2b0fd568b5234936a139f67a7ccdb014; State of North Carolina, "Nursing Homes" (https://www.nconemap.gov/: NC One Map, March 22, 2023), https://www.nconemap.gov/datasets/978258aae1a44779addb479514f34008_3/explore.

Local land use (and associated regulations, or lack thereof) is further discussed in *Section 6: Capability Assessment.*

Zoning Description	Sum of area (Square Miles)	Percent of Total Area
General Business	2.180	0.43%
Heavy Manufacturing	2.224	0.44%
Highway Business	1.611	0.32%
Light Manufacturing	2.097	0.42%
Multi-Family Residential	0.027	0.01%
Neighborhood Businesses	0.461	0.09%
Office-institutional	0.007	0.00%
Planned Residential District	0.229	0.05%
Planned Unit development	0.424	0.08%
Residential Agriculture	381.068	75.74%
Residential-Office	0.195	0.04%
Resort Residential	6.122	1.22%
Rural Residential	14.314	2.85%
Single Family Residential	92.138	18.31%
Total	503.099	100%

Table 3- 7: Summary of zoning types in Iredell County from Iredell County ArcGIS Open Data and Data resources[16]

Zoning Type	Square Miles	Percentage of Total Area
High Capital Investment/High Wage/Low Employment/Clean Industries	0.147	0.04%
Airport Industrial	0.919	0.23%
Commercial, Business, Industrial	10.330	2.51%
Commercial, Business, Industrial; Manufactured Home Overlay	0.001	0.00%
Corporate Park District	0.357	0.09%
Distribution and Wholesaling Operations	1.444	0.35%
Industrial	7.970	1.93%
Institutional	0.019	0.00%
Manufactured Home Park	1.529	0.37%
Multifamily Residential	0.208	0.05%
Neighborhood Business	0.095	0.02%
Residential Suburban	5.868	1.42%
Rural Agriculture	365.397	88.68%
Rural Agriculture; Agricultural Overlay	0.841	0.20%
Rural Agriculture; Manufactured Home Overlay	0.046	0.01%

[16] Iredell County. (2024). Zoning [Dataset]. In Iredell County Open Data. https://www.iredellcountync.gov/1256/ArcGIS-Open-Data-Data-Resources

Zoning Type	Square Miles	Percentage of Total Area
Rural Residential	16.877	4.10%
Rural Residential ; Manufactured Home Overlay	0.003	0.00%
Grand Total	**412.051**	**100.00%**

Table 3- 8: Summary of Zoning Types in Rowan County from the Rowan County Open Data Portal Zoning Data[17]

[17] Rowan County. (2022). Rowan County Zoning [Dataset]. In Rowan County Open Data Portal. https://gisdata-rowancountync.opendata.arcgis.com/datasets/RowanCountyNC::rowan-county-zoning/about

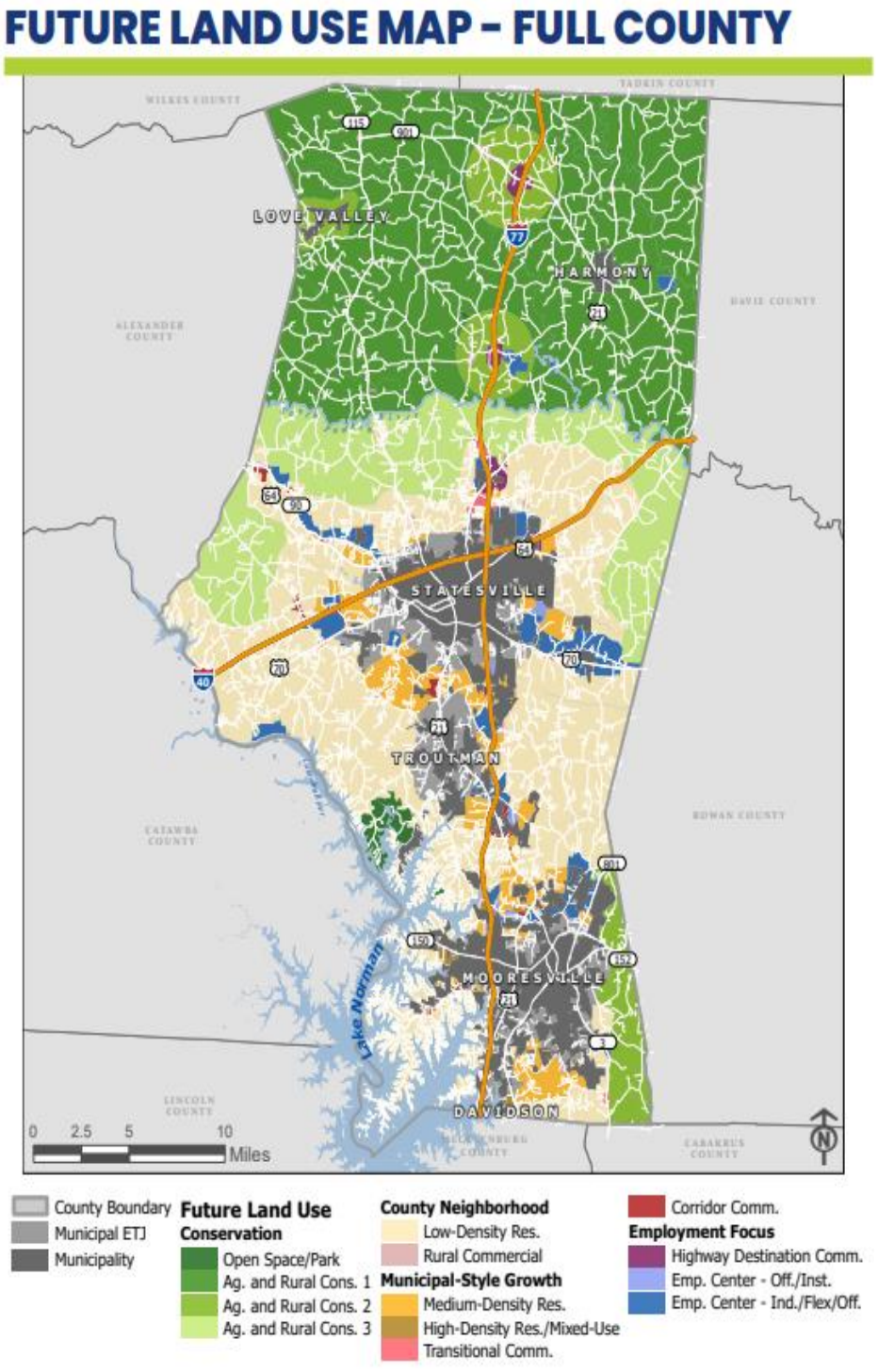


Figure 3- 14: Future Land Use Map from the Horizon Plan 2045 for Iredell County

Iredell County

The 2045 Horizon Plan[18] was developed as a comprehensive, long-term development framework to

support the significant growth Iredell County is experiencing, driven by its location along Interstate-77 and Interstate-40. Iredell County is a place that has the potential for attracting business expansion while maintaining a high quality of life. To manage this growth effectively, the County aims to balance economic development with land use planning that preserves rural character and agricultural interests, requiring collaboration with local municipalities and agencies to address future needs by 2045. The 2045 Horizon Plan outlines goals, policies, and actions to address strategic growth and development.

Development Goals

The development vision that guided the 2045 Horizon Plan are summarized as follows:

1. Balance growth and preservation to protect the core elements of the experience of living in Iredell County while allowing new opportunities for growth.
2. To act as a convenor in the county by coordinating efforts between entities and ensure that all are working towards a similar direction and a common future.
3. Support a variety of land use patterns and communities of unique characters to provide more opportunities for residents and workers in the county.

Future Land Use

According to the 2045 Horizon Plan, the population of Iredell County is projected to grow by 20% between 2020 and 2030 and the municipalities of Troutman and Mooresville have experienced the most significant growth. The county is also a major employment center and has 15,000 employees per workday that are not residents in the county. The county also has a variety of different land uses which, for example, include mountains, subdivisions, and downtown areas. The 2030 Horizon Plan had dedicated three quarters of the land to low density land use such as agricultural, residential, low density residential, and rural conservation. Most of the growth is expected to remain in rural and low density residential areas. There has recently been an increase in warehouse and distribution facilities in the County and more development of this type is expected to continue in the future, as some surrounding counties have capacity issues and are limited in their ability to support new development of warehouse and distribution facilities.

The goals of the future land use and growth is to manage and plan for collaboration with jurisdictions to align land use and transportation efforts across the County. The efforts should support rural preservation and municipal growth served by adequate infrastructure and public services. Actions that are outlined to address future land use and development the County plans on Implementing Transportation Master Plan, pursue additional funding for County-wide transportation projects, create a new position dedicated transportation planner in the County, update the Land Development Code to match the 2045 Horizon Guidance, and requiring right of way provision for future transit corridors.

[18] Clarion Associates and Iredell County Planning & Development Department, “2045 Horizon Plan: Iredell County” (Iredell County: Iredell County, December 19, 2023), https://www.iredellcountync.gov/DocumentCenter/View/338/2045-Horizon-Plan-PDF.

Rowan County

According to the Rowan County Working Agricultural Lands Plan[19], NC is expected to convert around 13,000 to 28,000 acres in the county to non-farm uses between 2016 and 2040. The County also expects most of the development in the County to be low-density residential development, such as subdivisions, with a smaller portion of the development for high-density residential growth and commercial or industrial development. Development is expected to increase along with population size, with the County experiencing 7% increase in population between 2010 and 2021.

[19] W. Stan Dixon and Ed Emory, "Rowan County Working Agricultural Land Plans" (Rowan County, North Carolina, February 2023), https://www.rowancountync.gov/DocumentCenter/View/42490/Rowan-County-Working-Agricultural-Lands-Plan-PDF.

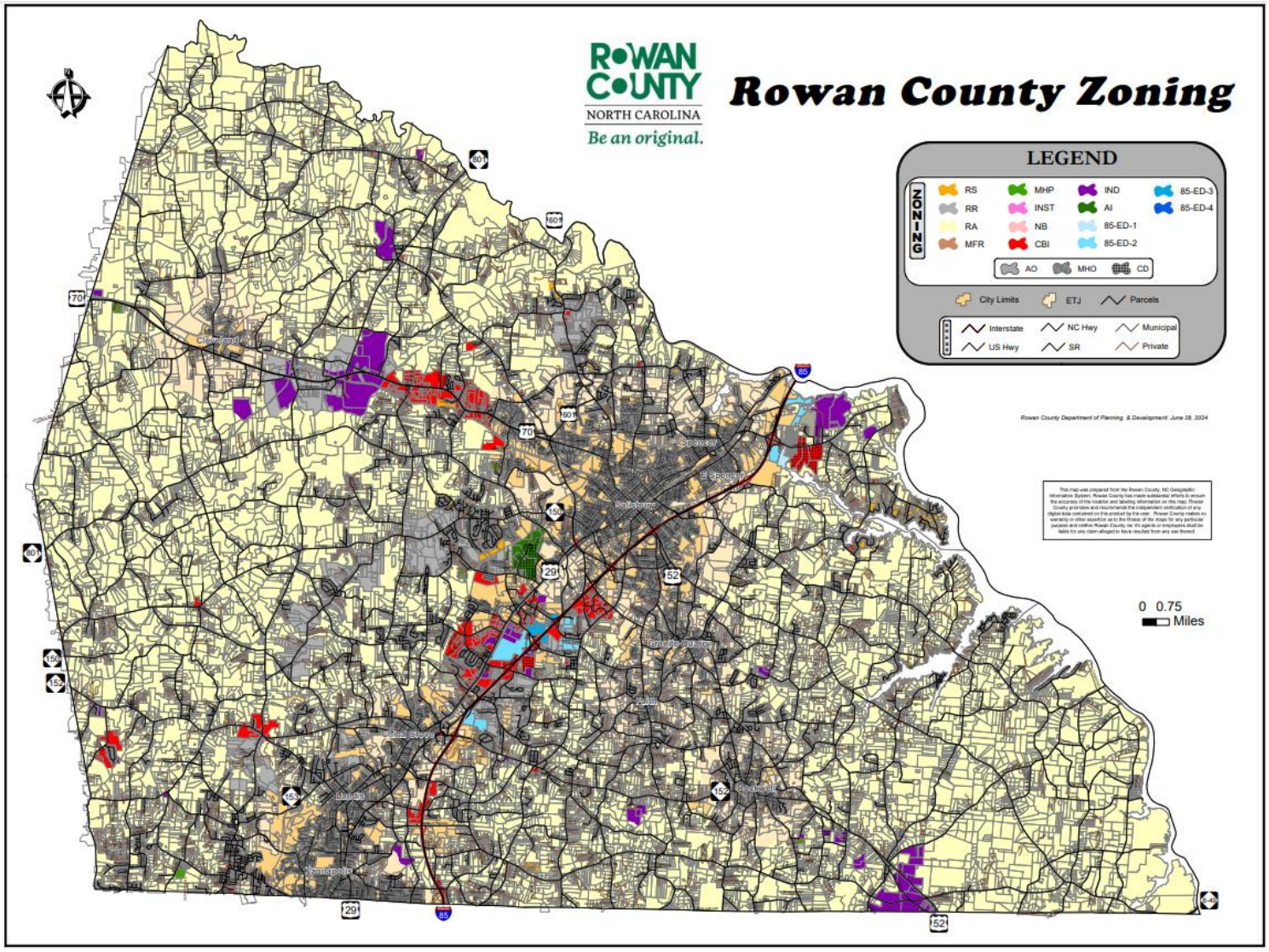


Figure 3- 15: Rowan County Zoning Map[20]. RR=Rural residential, RS = residential suburban, RA = Rural Agriculture, MFR = Multifamily Residential , INST = Institutional, NB = Neighborhood Business, CBI = Commercial/Business/Industrial, IND = Industrial, AI = Airport Industrial, 85-ED-1 = "high capital investment/high wage/low employment/clean" industries, 85-ED-2 = Distribution and Wholesaling Operations, 85-ED-3 = Corporate Park District, AO= Agricultural Overlay, MHO = Manufactured Home Overlay, CD = Conditional District

[20] Zoning Map. (n.d.). Rowan County, NC. Retrieved December 16, 2024, from https://www.rowancountync.gov/467/Zoning

3.4.5. Historic Properties

The Table 3-9 shows the number of historic districts or sites and buildings or structures listed in the National Register of Historic Places (NRHP) [21]. In addition, Appendix B lists all properties in the planning area that are registered in the National Register of Historic Places according to county, city, type of property, area of significance, and property names.

Table 3-9: Historic Property Counts in the Iredell and Rowan Planning Area

County	City	Number of Districts or Sites	Number of Buildings or Structures	Total
Iredell	Unincorporated Area	0	11	11
	Harmony	0	5	5
	Mooresville	4	6	10
	Statesville	10	18	28
	Troutman	0	1	1
	Total	**14**	**41**	**55**
Rowan	Unincorporated Area	1	15	16
	China Grove	0	1	1
	Cleveland	3	4	7
	East Spencer	0	1	1
	Granite Quarry	0	2	2
	Rockwell	0	3	3
	Salisbury	16	22	38
	Spencer	2	2	4
	Total	**21**	**51**	**72**
Total Planning Area		**35**	**92**	**127**

3.5. Employment and Industry

The Lowe's corporate headquarters is in Mooresville in Iredell County. Iredell County is also a hub of NASCAR racing. There are many racing teams and drivers that call Mooresville and Iredell County home. The major businesses in Rowan County are Freightliner, Continental Structural Plastics, and the corporate office of Delhaize/Food Lion Supermarkets. Agriculture is also a major source of income in the Iredell Rowan Region, and a large portion of land remains rural in character even though there has been rapid population growth in the southern portion of Iredell County and western portion of Rowan County. The early modern economy in the Iredell Rowan Region was built around agriculture but it has declined due to increasing development pressure on farmlands. In Rowan County 39% of residents

[21] "National Register Database and Research" (National Park Service, n.d.), https://www.nps.gov/subjects/nationalregister/database-research.htm.

work outside of the county, and 59% of residents work within the county[22].

According to the NC Department of Commerce (NC Commerce)[23], in 2023 0.52% of the employment in Iredell County and 0.04% of the employment in Rowan County was attributed to agriculture, which represents an overall decrease in the portion of agricultural employment since 2000 seen in Table 3-10. The largest industry of employment is Retail Trade in Iredell County, representing 16.01% of the total employment and 12,003 jobs, and Healthcare and Social Assistance in Rowan County, representing 15.21% of the total employment and 6,273 jobs. See Table 3-11 for a more detailed breakdown of industry types in Iredell and Rowan County.

Table 3-10: Percentage of total employment attributed to agriculture according to the NC Commerce annual average employment.

Year	2023	2018	2013	2000
Iredell	0.52%	0.54%	0.73%	0.79%
Rowan	0.04%	0.08%	0.02%	0.26%

Table 3-11: Employment types, Average Annual Employment, Percentage of total employment by industry from NC Commerce in 2023.

County	Industry	Average Annual Employment	Establishments	Percentage of Total Employment
Iredell	Retail Trade	12,003	768	16.01%
Iredell	Manufacturing	8,644	290	11.53%
Iredell	Accommodation and Food Services	7,842	431	10.46%
Iredell	Healthcare and Social Assistance	6,854	594	9.14%
Rowan	Healthcare and Social Assistance	6,273	295	15.21%
Iredell	Management of Companies and Enterprises	6,138	27	8.19%
Rowan	Retail Trade	5,570	399	13.51%
Iredell	Construction	5,150	776	6.87%
Iredell	Education Services	4,586	101	6.12%
Rowan	Accommodation and Food Services	4,494	261	10.90%

[22] W. Stan Dixon and Ed Emory, “Rowan County Working Agricultural Land Plans.”
[23] “Quarterly Census of Employment and Wages,” Data by Industry (d4.nccommerce.com: NC Department of Commerce, n.d.), https://d4.nccommerce.com/QCEWSelection.aspx.

County	Industry	Average Annual Employment	Establishments	Percentage of Total Employment
Iredell	Administrative and Waste Services	4,474	536	5.97%
Rowan	Education Services	3,875	71	9.40%
Iredell	Wholesale Trade	3,717	525	4.96%
Rowan	Transportation and Warehousing	3,567	147	8.65%
Iredell	Professional and Technical Services	3,530	944	4.71%
Rowan	Construction	3,256	448	7.90%
Iredell	Public Administration	2,899	31	3.87%
Rowan	Public Administration	2,591	34	6.28%
Iredell	Arts, Entertainment, Recreation	2,333	171	3.11%
Rowan	Wholesale Trade	2,263	165	5.49%
Rowan	Administrative and Waste Services	2,235	241	5.42%
Iredell	Other Services	2,207	552	2.94%
Rowan	Manufacturing	1,998	89	4.85%
Rowan	Management of Companies and Enterprises	1,361	20	3.30%
Iredell	Finance and Insurance	1,345	331	1.79%
Iredell	Transportation and Warehousing	1,094	197	1.46%
Rowan	Other Services	1,036	287	2.51%
Iredell	Real Estate and Rental and Leasing	829	376	1.11%
Rowan	Arts, Entertainment, Recreation	661	51	1.60%
Rowan	Finance And Insurance	530	141	1.29%
Iredell	Utilities	474	15	0.63%
Iredell	Information	450	121	0.60%
Iredell	Agriculture	391	34	0.52%
Rowan	Professional and Technical Services	269	1,063	0.65%
Rowan	Real Estate and Rental and Leasing	135	261	0.33%
Rowan	Utilities	115	9	0.28%
Rowan	Information	71	11	0.17%
Rowan	Agriculture	18	4	0.04%

County	Industry	Average Annual Employment	Establishments	Percentage of Total Employment
Iredell	Mining	3	3	0.00%
Rowan	Unclassified	0	10	0.00%
Iredell	Unclassified	0	23	0.00%
Rowan	Mining	0	0	0.00%

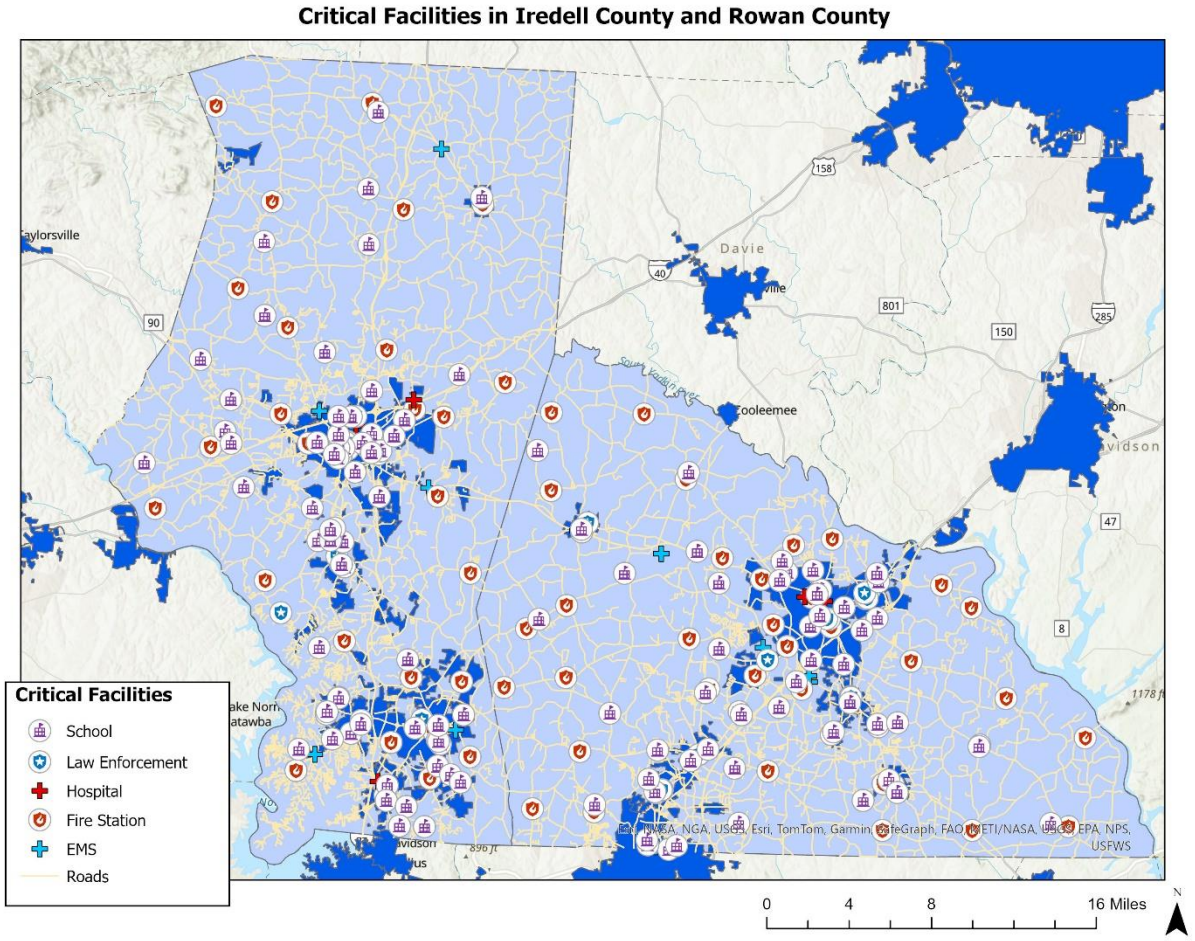


Figure 3- 16: Critical facilities in the planning area

SECTION 4: HAZARD IDENTIFICATION

This section describes how the Planning Committee identified the hazards to be included this plan. It consists of the following five subsections:

4.1. Overview
4.2. Description of Full Range of Hazards
4.3. Disaster Declarations
4.4. Hazard Evaluation
4.5. Hazard Identification Results

44 CFR Requirement
44 CFR Part 201.6(c)(2)(i): The risk assessment shall include a description of the type, location and extent of all-natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

4.1. Overview

The Iredell Rowan Region is vulnerable to a wide range of natural and human caused hazards that threaten life and property. Current FEMA regulations and guidance under the Disaster Mitigation Act of 2000 (DMA 2000) require, at a minimum, an evaluation of a full range of natural hazards. An evaluation of human-caused hazards (i.e., technological hazards, terrorism, etc.) is encouraged, though not required, for plan approval. The Iredell Rowan Region has included a comprehensive assessment of both types of hazards.

Upon a review of the full range of natural hazards suggested under FEMA planning guidance, the participating counties in the Iredell Rowan Region (Iredell County and Rowan County) have identified several hazards that are to be listed in its Regional Hazard Mitigation Plan. These hazards were identified through an extensive process that utilized input from the Iredell Rowan Regional Hazard Mitigation Planning Committee members, research of past disaster declarations in the participating counties and review of the North Carolina State Hazard Mitigation Plan (2023). Readily available information from reputable sources (such as federal and state agencies) was also evaluated to supplement information from these key sources.

Table 4- 1 lists the full range of natural hazards initially identified for inclusion in the Plan and provides a brief description for each. This table includes 23 individual hazards. Some of these hazards are interrelated or cascading, but for preliminary hazard identification purposes these individual hazards are broken out separately.

Next, Table 4- 2 lists the federal disaster declarations in the Iredell Rowan Region.

Next, Table 4- 3 documents the evaluation process used for determining which of the initially identified hazards are considered significant enough to warrant further evaluation in the risk assessment. For each

hazard considered, the table indicates whether the hazard was identified as a significant hazard to be further assessed, how this determination was made, and why this determination was made. The table works to summarize not only those hazards that *were* identified (and why) but also those that *were not* identified (and why not). Hazard events not identified for inclusion at this time may be included during future evaluations and updates of the risk assessment if deemed necessary by the Regional Hazard Mitigation Planning Committee during the plan update process.

Lastly, Table 4- 4 provides a summary of the hazard identification and evaluation process noting that 14 of the 23 initially identified hazards are considered significant enough for further evaluation through this Plan's risk assessment (marked with a "Yes").

4.2. Description of Full Range of Hazards

Table 4- 1: Descriptions of the Full Range of Initially Identified Hazards

Hazard	Description
Atmospheric Hazards	
Avalanche	A rapid fall or slide of a large mass of snow down a mountainside.
Drought	A prolonged period of less than normal precipitation such that the lack of water causes a serious hydrologic imbalance. Common effects of drought include crop failure, water supply shortages, and fish and wildlife mortality. High temperatures, high winds, and low humidity can worsen drought conditions and make areas more susceptible to wildfire. Human demands and actions could hasten or mitigate drought-related impacts on local communities.
Hailstorm	Any storm that produces hailstones that fall to the ground; usually used when the amount or size of the hail is considered significant. Hail is formed when updrafts in thunderstorms carry raindrops into parts of the atmosphere where the temperatures are below freezing.
Extreme Heat	A heat wave may occur when temperatures hover 10 degrees or more above the average high temperature for the region and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. A heat wave combined with a drought can be very dangerous and have severe economic consequences on a community.
Hurricane and Storm	Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and with a diameter averaging 10 to 30 miles across. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center.
Lightning	Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a "bolt" when the buildup of charges become strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the

Hazard	Description
	sky as it flashes, but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes thunder.
Nor'easter	Like hurricanes, nor'easters are ocean storms capable of causing substantial damage to coastal areas in the Eastern United States due to their associated strong winds and heavy surf. Nor'easters are named for the winds that blow in from the northeast and drive the storm up the East Coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast. They are caused by the interaction of the jet stream with horizontal temperature gradients and generally occur during the fall and winter months when moisture and cold air are plentiful. Nor'easters are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surf that causes severe beach erosion and coastal flooding.
Tornado	A tornado is a violently rotating column of air that has contact with the ground and is often visible as a funnel cloud. Its vortex rotates cyclonically with wind speeds ranging from as low as 40 mph to as high as 300 mph. Tornadoes are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The destruction caused by tornadoes ranges from light to catastrophic depending on the intensity, size and duration of the storm.
Severe Thunderstorm	Thunderstorms are caused by air masses of varying temperatures meeting in the atmosphere. Rapidly rising warm moist air fuels, the formation of thunderstorms. Thunderstorms may occur singularly, in lines, or in clusters. They can move through an area very quickly or linger for several hours. Thunderstorms may result in hail, tornadoes, or straight-line winds. Windstorms pose a threat to lives, property, and vital utilities primarily because of flying debris and can down trees and power lines.
Winter Storm and Freeze	Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. Blizzards, the most dangerous of all winter storms, combine low temperatures, heavy snowfall, and winds of at least 35 miles per hour, reducing visibility to only a few yards. Ice storms occur when moisture falls and freezes immediately upon impact on trees, power lines, communication towers, structures, roads and other hard surfaces. Winter storms and ice storms can down trees, cause widespread power outages, damage property, and cause fatalities and injuries to human life.
Geologic Hazards	
Earthquake	A sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the surface. This movement forces the gradual building and accumulation of energy. Eventually, strain becomes so great that the energy is abruptly released, causing the shaking at the earth's surface which we know as an earthquake. Roughly 90 percent of all earthquakes occur at the boundaries where plates meet, although it is possible for earthquakes to occur entirely within plates. Earthquakes can affect hundreds of thousands of square miles; cause damage to property measured in tens of billions of dollars; result in loss of life and injury to hundreds of thousands of persons; and disrupt the social and economic functioning of the affected area.
Expansive Soils	Soils that will exhibit some degree of volume change with variations in moisture conditions. The most important properties affecting degree of volume change in a

Hazard	Description
	soil are clay mineralogy and the aqueous environment. Expansive soils will exhibit expansion caused by the intake of water and, conversely, will exhibit contraction when moisture is removed by drying. They often appear sticky when wet and are characterized by surface cracks when dry. Expansive soils become a problem when structures are built upon them without taking proper design precautions into account about soil type. Cracking in walls and floors can be minor or can be severe enough for the home to be structurally unsafe.
Landslide	The movements of a mass of rock, debris, or earth down a slope when the force of gravity pulling down the slope exceeds the strength of the earth materials that comprise to hold it in place. Slopes greater than 10 degrees are more likely to slide, as are slopes where the height from the top of the slope to its toe is greater than 40 feet. Slopes are also more likely to fail if vegetative cover is low and/or soil water content is high.
Land Subsidence	The gradual settling or sudden sinking of the Earth's surface due to the subsurface movement of earth materials. Causes of land subsidence include groundwater plumage, aquifer system compaction, drainage of organic soils, underground mining, hydro compaction, natural compaction, sinkholes, and thawing permafrost.
Tsunami	A series of waves generated by an undersea disturbance such as an earthquake. The speed of a tsunami traveling away from its source can range from up to 500 miles per hour in deep water to approximately 20 to 30 miles per hour in shallower areas near coastlines. Tsunamis differ from regular ocean waves in that their currents travel from the water surface all the way down to the sea floor. Wave amplitudes in deep water are typically less than one meter; they are often barely detectable to the human eye. However, as they approach shore, they slow in shallower water, basically causing the waves from behind to effectively "pile up", and wave heights to increase dramatically. As opposed to typical waves which crash at the shoreline, tsunamis bring with them a continuously flowing 'wall of water' with the potential to cause devastating damage in coastal areas located immediately along the shore.
Volcano	A mountain that opens downward to a reservoir of molten rock below the surface of the earth. While most mountains are created by forces pushing up the earth from below, volcanoes are different in that they are built up over time by an accumulation of their own eruptive products: lava, ash flows, and airborne ash and dust. Volcanoes erupt when pressure from gases and the molten rock beneath becomes strong enough to cause an explosion.
Hydrologic Hazards	
Dam and Levee Failure	Dam failure is the collapse, breach, or other failure of a dam structure resulting in downstream flooding. In the event of a dam failure, the energy of the water stored behind even a small dam can cause loss of life and severe property damage if development exists downstream of the dam. Dam failure can result from natural events, human-induced events, or a combination of the two. The most common cause of dam failure is prolonged rainfall that produces flooding. Failures due to other natural events such as hurricanes, earthquakes or landslides are significant because there is generally little or no advance warning.
Erosion	Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions.

Hazard	Description
	Natural, or geologic, erosion has occurred since the Earth's formation and continues at a very slow and uniform rate each year.
Flood	The accumulation of water within a water body results in the overflow of excess water onto adjacent lands, usually floodplains. A floodplain is the land adjoining the channel of a river, stream ocean, lake or other watercourse or water body that is susceptible to flooding. Most floods fall into the following three categories: riverine flooding, coastal flooding, or shallow flooding (where shallow flooding refers to sheet flow, ponding and urban drainage).
Other Hazards	
Hazardous Materials Incident	Hazardous material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation-related accidents in the air, by rail, on the nation's highways and on the water. HAZMAT incidents consist of solid, liquid and/or gaseous contaminants that are released from fixed or mobile containers, whether by accident or by design as with an intentional terrorist attack. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind and possibly wildlife as well.
Terror Threat	Terrorism is defined by FEMA as, "the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom." Terrorist acts may include assassinations, kidnappings, hijackings, bomb scares and bombings, cyberattacks (computer-based), and the use of chemical, biological, nuclear and radiological weapons.
Wildfire	An uncontrolled fire burning in an area of vegetative fuels such as grasslands, brush, or woodlands. Heavier fuels with high continuity, steep slopes, high temperatures, low humidity, low rainfall, and high winds all work to increase risk for people and property located within wildfire hazard areas or along the urban/wildland interface. Wildfires are part of the natural management of forest ecosystems, but most are caused by human factors. Over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning.

4.3. Disaster Declarations

Disaster declarations provide initial insight into the hazards that may impact the Iredell Rowan Regional planning area. Since 1973, 18 disasters declarations have been declared in Iredell County and 15 in Rowan County. This includes one declaration for tornadoes, one declaration for drought, one declaration for public health crises, four declaration tropical storms, six declarations for hurricanes, two flooding declarations, and three severe winter weather declarations.

*Table 4- 2: Recorded federally declared disasters from 1973 to 2024. *please note that some disasters may have multiple declaration numbers associated with emergency declarations and major disaster declarations. EM = emergency declaration; DR = Disaster Declaration*

Designated Counties	Disaster	Declaration Date	Declaration Number*	Assistance Types for Disaster *(if applicable)*
Iredell, Rowan	Tropical Storm Helene	September 25, 2024	EM-3617-NC, DR-4827-NC	Individual, Public (Category A & B)
Iredell, Rowan	Hurricane Ian	October 1, 2022	EM-3586-NC	Public Assistance (Category B)
Iredell, Rowan	Tropical Storm Eta	March 3, 2021	4588-DR-NC	Public Assistance (Categories A – G)
Iredell, Rowan	Covid-19	March 25, 2020	EM-3471-NC, DR-4487-NC	Individual, Public Assistance (Category B)
Iredell, Rowan	Hurricane Dorian	September 3, 2019	EM-3423-NC	Public Assistance (Category B)
Iredell	Tropical Storm Michael	January 31, 2019	DR-4412-NC	Public Assistance
Rowan	Hurricane Florence	September 14, 2018	DR-4393-NC	Public Assistance
Iredell, Rowan	Hurricane Florence	September 10, 2018	EM-3401-NC	Public Assistance (Category B)
Iredell, Rowan	Hurricane Katrina Evacuation in North Carolina	September 5, 2005	EM-3222-NC	Public Assistance (Category B)
Iredell	Tropical Storm Frances	October 8, 2004	DR-1546-NC	Individual Assistance
Iredell, Rowan	North Carolina Severe Ice Storm	December 12, 2002	DR-1448-NC	Public Assistance (Categories A – G)
Rowan	North Carolina Hurricane Floyd & Irene	September 16, 1999	EM-3146-NC; DR-1292-NC	Public Assistance (Categories A – G), Individual Assistance
Iredell	North Carolina Storms/flooding	February 23, 1996	DR-1103-NC	Public Assistance (Categories A – G)

Designated Counties	Disaster	Declaration Date	Declaration Number*	Assistance Types for Disaster *(if applicable)*
Iredell, Rowan	North Carolina Blizzard	January 13, 1996	DR-1087-NC	Public Assistance (Categories A – G)
Iredell, Rowan	North Carolina Severe Snowfall and Winter Storm	March 17, 1993	EM-3110-NC	Public Assistance (Category A & B)
Iredell, Rowan	North Carolina Hurricane Hugo	September 25, 1989	DR-844-NC	Individual Assistance, Public Assistance (Categories A – G)
Iredell	North Carolina Tornadoes	May 17, 1989	DR-827-NC	Individual Assistance
Iredell, Rowan	North Carolina Drought	August 11, 1977	EM-3049-NC	Public Assistance (Category A & B)
Iredell, Rowan	North Carolina Drought and Freezing	March 2, 1977	EM-3033-NC	Public Assistance (Category A & B)
Iredell	North Carolina Severe Storms, Flooding	June 25, 1973	DR-394-NC	Individual Assistance, Public Assistance (Categories A – G)

4.4. Hazard Evaluation

Table 4- 3: Natural hazards considered and hazard determinations for the HMP process

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
Atmospheric Hazards				
Avalanche	No	No	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of US Forest Service National Avalanche Center website	• The United States avalanche hazard is limited to mountainous western states including Alaska as well as some areas of low risk in New England. • Avalanche hazard was removed from the North Carolina State Hazard Mitigation Plan after determining the mountain elevation in Western North Carolina did not have enough snow to produce this hazard. • Avalanche is not included in any of

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
				the previous Iredell Rowan hazard mitigation plans. There is no risk of avalanche events in North Carolina.
Drought	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plans • Review of the North Carolina Drought Monitor website	• Drought is a normal part of all climatic regimes, including areas with high and low average rainfall. • Droughts are discussed in the NC State Hazard Mitigation Plan as a lesser hazard. • Drought is included in the previous Iredell Rowan hazard mitigation plan.
Hail	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of the National Oceanic and Atmospheric Administrations (NOAA) National Center for Environmental Information (NCEI) National Climatic Data Center (NCDC) Storm Events Database	• Although hailstorms occur primarily in the Midwestern states, they do occur in every state on the mainland U.S. Most inland regions experience hailstorms at least two or more days each year. • Hailstorm events are discussed in the state plan under the severe thunderstorm hazard, and severe thunderstorms are considered the highest risk hazard in the planning area • Hail is addressed under the severe thunderstorm hazard in the three previous Iredell Rowan hazard mitigation plans. Given the frequency of the event, individual analysis is warranted.
Extreme Heat	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of the North Carolina State Hazard • Mitigation Plan • Review of previous	• Many areas of the United States are susceptible to heat waves, including North Carolina. • The NC State Hazard Mitigation identifies Heat Wave as a possible hazard for the planning area. • The NC State Hazard Mitigation Plan reports the Piedmont Region

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
			Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database	as having moderate vulnerability compared to the rest of the state. • NCDC does not report any extreme heat events for the Iredell Rowan counties.
Hurricane and Tropical Storm	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database • Review of historical presidential disaster declarations	• The Atlantic and Gulf regions are most prone to landfall by hurricanes and tropical storms. • Hurricane and tropical storm events are discussed in the state plan and are listed as one of the top 3 hazards which could occur in the area. • Hurricane and tropical storm were addressed in the previous Iredell Rowan hazard mitigation plans.
Lightning	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database	• lightning events are experienced in every region of North Carolina, but Iredell County experienced 95,443 and Rowan County experienced 85,960 total lightning pulses in 2020. • Lightning events are discussed in the state plan as part of the severe thunderstorm hazard and severe thunderstorms are identified as the most likely hazard event to occur in the planning area.
Nor'easter	No	No	• Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database	• Nor'easters are discussed in the state plan but are included in other hazard descriptions. • Nor'easter was considered for inclusion in one of the three previous Iredell Rowan hazard mitigation plans; however, it was found to pose low enough risk not to warrant an in-depth hazard assessment. • NCDC does not report any

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
				nor'easter activity for the Iredell Rowan Region. However, nor'easters may have affected the region as severe winter storms. In this case, the activity would be reported under winter storm events, which is a hazard included in the Iredell Rowan HMP as a winter storm and freeze hazard.
Tornado	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database • Review of historical presidential disaster declarations.	• Tornado events are discussed in the NC State Hazard Mitigation Plan. The NC HMP reports that tornadoes and thunderstorms are the likeliest hazard to occur in the planning area. • Tornado events were addressed in the previous Iredell Rowan hazard mitigation plan and the NCDC reports that 10 tornadoes have occurred in the planning area between 2014 and 2024. There may be more unreported tornado occurrences in the planning area that are not included in the NCDC records.
Severe Thunderstorm	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database • Review of historical presidential disaster declarations.	• Over 100,000 thunderstorms are estimated to occur each year on the U.S. mainland, and they are experienced in nearly every region. • Severe thunderstorm events are discussed in the NC State Hazard Mitigation Plan and are identified as the top hazard in the Iredell Rowan planning area • Severe thunderstorm events were addressed in the previous Iredell Rowan hazard mitigation plans.
Winter Storm and Freeze	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment	• Winter storms affect every state in the continental U.S. and Alaska. • Severe winter weather is listed as

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
			• Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database • Review of historical presidential disaster declarations.	the second most likely hazard to occur in the planning area. • Winter storm events were addressed in the previous Iredell Rowan hazard mitigation plans.
Geologic Hazards				
Earthquake	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of the National Geophysical Data Center • U.S. Geological Survey (USGS) Earthquake Hazards Program website	• Although the zone of greatest seismic activity in the United States is along the Pacific Coast, eastern regions have experienced significant earthquakes. • Earthquake events are discussed in the state plan and both participating counties in the Iredell Rowan Region are considered to have low vulnerability to an earthquake event • Although the planning area has a low vulnerability to earthquake, earthquakes have occurred in and around the State of North Carolina in the past. The state is affected by the Charleston and the New Madrid (near Missouri) fault lines which have generated up to 8.0 magnitude earthquakes in the last 200 years. • The previous hazard mitigation plan for the Iredell Rowan Region addresses earthquakes.
Expansive Soils	No	No	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County	• The effects of expansive soils are most prevalent in parts of the Southern, Central, and Western U.S. • Geological hazards, which include landslides, sinkholes, and coastal erosion, are identified in the state plan and however, neither of the

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
			hazard mitigation plan • Review of USDA Soil Conservation Service's Soil Survey	previous Iredell Rowan hazard mitigation plans identifies expansive soils as a potential hazard. • According to FEMA and USDA sources, the Iredell Rowan Region is in an area that has "little or no" clay swelling potential.
Landslide	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of USGS Landslide Incidence and Susceptibility Hazard Map • Review of the North Carolina Geological Survey database of historic landslides	• Landslides occur in every state in the U.S, and they are most common in the coastal ranges of California, the Colorado Plateau, the Rocky Mountains, and the Appalachian Mountains. • Geological hazards, which include landslides, sinkholes, and coastal erosion, are discussed in the state plan, but geological hazards are listed as the second lowest probability hazard of occurring in the planning area. • One of the previous Iredell Rowan hazard mitigation plans address landslides. (Landslide was considered for inclusion in the other previous plan; however, it was found to pose low enough risk not to warrant an in-depth hazard assessment). • USGS landslide hazard maps indicate "low incidence", and "moderate susceptibility" are found throughout most of the Iredell Rowan Region. However, there is an area of "high incidence" (more than 15% of the area is involved in land sliding) in central Iredell County and "moderate incidence" in the northwest corner of Iredell County (both areas also have high susceptibility). • Data provided by North Carolina Geological Survey (NCGS) indicate no recorded landslide events in the Iredell Rowan Region.

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
Land Subsidence	No	No	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan	• Land subsidence affects at least 45 states, including North Carolina. However, because of the broad range of causes and impacts, there has been limited national focus on this hazard. • The NC HMP does not address land subsidence hazards directly. • Neither of the previous Iredell Rowan hazard mitigation plans identifies land subsidence as a potential hazard.
Tsunami	No	No	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of FEMA • "How-to" mitigation planning guidance (Publication 386-2, "Understanding Your Risks – Identifying Hazards and Estimating Losses).	• No record exists of a catastrophic Atlantic basin tsunami impacting the mid-Atlantic coast of the United States. • Tsunami inundation zone maps are not available for communities located along the U.S. East Coast. • Tsunamis are discussed in the state plan and described as a "greater" hazard for the state. However, the Piedmont Region scored zero for tsunami hazard risk. • FEMA mitigation planning guidance suggests that locations along the U.S. East Coast have a low tsunami risk and need not conduct a tsunami risk assessment at this time.
Volcano	No	No	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of USGS Volcano Hazards Program website	• More than 65 potentially active volcanoes exist in the United States, and most are in Alaska. The Western states and Hawaii are also potentially affected by volcanic hazards. • There are no active volcanoes in North Carolina. • There has not been a volcanic eruption in North Carolina in over 1 million years. • No volcanoes are located near the Iredell Rowan Region.
Hydrologic Hazard				

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
Dam and Levee Failure	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of North Carolina Division of Land Management website	• The National Inventory of Dams (NID) shows dams in every state. • Dam failure is discussed in the state plan and is found to be a hazard that the Iredell Rowan Region may experience. • Dam and Levee failure is discussed in previous Iredell Rowan HMPs.
Erosion	**Yes**	Yes	• Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan	• Coastal erosion is discussed in the state plan but only for coastal areas (there is no discussion of riverine erosion). Iredell Rowan is not in a coastal area. • Although riverine erosion was not previously addressed, it remains a natural, dynamic, and continuous process in the Iredell Rowan Region that warrants inclusion as a potential hazard. Other counties in North Carolina have experienced significant impacts due to erosion, so it is important to address potential erosion impacts and prevention of erosion impacts.
Flood	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database • Review of historical disaster declarations	• Floods occur in all 50 states and in the U.S. territories. • The flood hazard is thoroughly discussed in the state plan. The Iredell Rowan Region has a moderate risk of flooding and 9% of the Iredell Rowan Region is in an identified floodplain (100 or 500 years). • All municipalities in Rowan County participate in the NFIP. • The previous hazard mitigation plan in the Iredell Rowan Region

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
			• Review of FEMA Digital Flood Insurance Rate Map (DFIRM) data • Review of FEMA's NFIP Community Status Book and Community Rating System (CRS)	addresses flood hazard.
Storm Surge	No	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of NOAA NCDC Storm Events Database	• Given the inland location of the Iredell Rowan Region, storm surge would not affect the area. • Storm surge is discussed in the state plan under the hurricane hazard. The Piedmont Region, which includes the Iredell Rowan Region, has zero vulnerability to storm surge. • Neither of the previous hazard mitigation plans in the Iredell Rowan Region address storm surge. • No historical events were reported by NCDC.
Other Hazards				
Hazardous Materials Incident	**Yes**	Yes	• Review of FEMA's Multi-Hazard Identification and Risk Assessment • Review of previous Iredell Rowan County hazard mitigation plan	• Cities, counties, and towns where hazardous materials fabrication, processing, and storage sites are located, and those where hazardous waste treatment, storage or disposal facilities operate are at risk for hazardous materials events. • The previous Iredell Rowan Region hazard mitigation plans include hazardous materials incidents.
Terror Threat	No	Yes	• Review of previous Iredell Rowan County hazard mitigation plan • Review of local official knowledge	• Terrorist activity was considered for inclusion in one of the two previous Iredell Rowan hazard mitigation plans; however, it was found to pose low enough risk not to warrant an in-depth hazard assessment.
Wildfire	**Yes**	Yes	• Review of FEMA's Multi-Hazard	• Wildfires occur in all parts of the United States. Wildfire hazard risks

Natural Hazards	Was this hazard identified as significant to be listed in the plan this time? (yes or no)	Was the hazard included in the NC State Plan?	How was the determination made?	Why was the determination Made?
			Identification and Risk Assessment • Review of NC State Hazard Mitigation Plan • Review of previous Iredell Rowan County hazard mitigation plan • Review of Southern Wildfire Risk Assessment (SWRA) Data • Review of the NC Division of Forest Resources website	will increase as low-density development along the urban/wildland interface increases. • Wildfires are discussed in the state plan as a “greater” hazard of concern, although the Piedmont Region, which includes the Iredell Rowan Region, shares the lowest vulnerability in the state. However: • A review of SWRA data indicates that there are some areas of elevated concern in the Iredell Rowan Region. • According to the North Carolina Division of Forest Resources, the Iredell Rowan Region experiences an average of 121 fires each year which burn a combined average of 108 acres. • The previous hazard mitigation plans in the Iredell Rowan Region addresses wildfire.

4.5. Hazard Identification Results

Table 4- 4: Summary results of the hazard identification and evaluation process.

Hazard	Hazard	Significant Hazard to the Planning Area (Yes/No)
Atmospheric	Avalanche	No
	Drought	**Yes**
	Hailstorm	**Yes**
	Extreme Heat	**Yes**
	Hurricane and Tropical Storm	**Yes**
	Lightning	**Yes**
	Nor'easter	No
	Tornado	**Yes**
	Severe Thunderstorm	**Yes**
	Winter Storm and Freeze	**Yes**
Geologic Hazards	**Earthquake**	**Yes**
	Expansive Soils	No
	Landslides	**Yes**
	Land Subsidence	No
	Tsunami	No
	Volcano	No
Hydrologic Hazards	**Dam and Levee Failure**	**Yes**
	Erosion	**Yes**
	Flood	**Yes**
	Storm Surge	No
Other Hazards	**Hazardous Material Incident**	**Yes**
	Terror Threat	No
	Wildfire	**Yes**

SECTION 5: Hazard Profiles

This section includes detailed hazard profiles for each of the hazards identified in the previous section (Hazard Identification) as significant enough for further evaluation in the Iredell Rowan Regional Hazard Mitigation Plan. It contains the following subsections:

5.1. Overview
5.2. Study Area
5.3. Methodologies and Assumptions
5.4. Asset Inventory

ATMOSPHERIC HAZARDS

5.5. Drought
5.6. Extreme Heat
5.7. Hail
5.8. Hurricane and Tropical Storm
5.9. Lightning
5.10. Severe Thunderstorm
5.11. Tornado
5.12. Winter Storm and Freeze

GEOLOGICAL HAZARDS

5.13. Earthquake
5.14. Landslide

HYDROLOGIC HAZARDS

5.15. Dam and Levee Failure
5.16. Erosion
5.17. Flood

OTHER HAZARDS

5.18. Hazardous Materials Incidents
5.19. Wildfire
5.20. CONCLUSIONS ON HAZARD RISK

44 CFR Requirement
44 CFR Part 201.6I(2)(i): The risk assessment shall include a description of the type, location and extent of all-natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events

5.1. Overview

This section includes detailed hazard profiles for each of the hazards identified in the previous section (Hazard Identification) as significant enough for further evaluation in the Iredell Rowan Region hazard risk assessment. Each hazard profile includes a general description of the

hazard, its location and extent, notable historical occurrences, and the probability of future occurrences, including future climate change impacts. Each profile also includes specific items noted by members of the Iredell Rowan Regional Hazard Mitigation Planning Committee as it relates to unique historical or anecdotal hazard information for the counties in the Iredell Rowan Region, or a participating municipality within them.

As per Section 4, the following hazards were identified for further evaluation:

- Atmospheric
  - Drought
  - Extreme Heat
  - Hail
  - Hurricane and Tropical Storm
  - Lightning
  - Severe Thunderstorm (including straight-line winds)
  - Tornado
  - Winter Storm and Freeze
- Geologic
  - Earthquake
  - Landslide
- Hydrologic
  - Dam and Levee Failure
  - Erosion
  - Flood
- Other
  - Hazardous Materials Incident
  - Wildfire

5.2. Study Area

The Iredell Rowan Region includes two counties: Iredell and Rowan. Table 5- 1 provides a summary table of the participating jurisdictions within each county. In addition, Table 5- 1 provides a base map, for reference, of the Iredell Rowan Region.

Table 5- 1: Jurisdictions in the planning area

County	Jurisdiction
Iredell	Harmony
	Love Valley
	Mooresville
	Statesville
	Troutman
Rowan	China Grove
	Cleveland
	East Spencer
	Faith
	Granite Quarry

County	Jurisdiction
	Landis
	Rockwell
	Salisbury
	Spencer

5.3. Methodologies and Assumptions

5.3.1. Hazard Description

This section describes the hazard, including discussion of its speed of onset and duration, and any secondary effects, followed by details specific to the Iredell Rowan planning area. It also includes details about hazard characteristics, types of hazards, causes, and affected areas.

5.3.2. Location

This section includes information on the hazard's physical extent, with mapped boundaries where applicable. This includes location description, and maps where applicable, for reported natural hazard events and where the hazards are likely to occur.

5.3.3. Extent

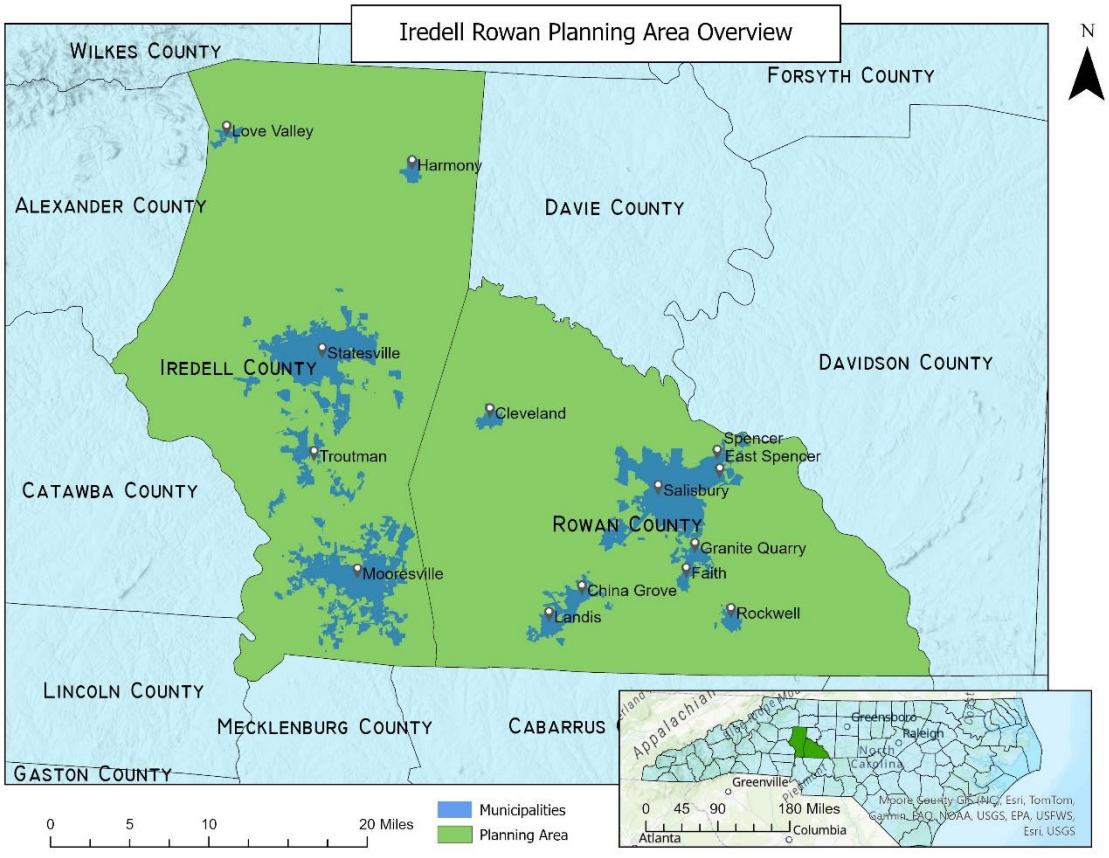


Figure 5- 1: Iredell Rowan Planning Area Overview

This section includes information on the hazard extent in terms of magnitude, describe how the severity of the hazard can be measured. Where available, the most severe event on record is used as a frame of reference. This also includes historical occurrences of the hazard, extent of events, and the definition of the extent of the hazard within the planning area.

5.3.4. Historical Occurrences

This section contains information on historical events, including the location and consequences of all past events on record within or near the planning area. This includes records from local sources and national sources such as the National Climatic Data Center (NCDC) Storm Events Database Records, National Geophysical Data Center/World Data Service (NGDC/WDS) Significant Earthquake Database, FEMA's National Inventory of Dams (NID), and the US Drought Monitor.

5.3.5. Probability of Future Occurrence

A risk assessment is performed to determine the potential impacts of hazards on the people, built and natural environments, and economy of a given planning area. The Risk Assessment provides the foundation for the rest of the mitigation planning process, which is focused on identifying and prioritizing actions to reduce risk to hazards. In addition to informing the Mitigation Strategy, the Risk Assessment can also be used to establish emergency preparedness and response priorities, for land use and comprehensive planning, and for decision making by elected officials, city and county departments, businesses, and organizations in the community.

A typical risk assessment consists of three primary components. Some hazard identification process must take place, followed by a detailed profiling of the hazards addressed in the plan. Then the profiled hazards are assessed to determine the vulnerability of the planning area to each hazard being addressed. It is also important to document key details regarding the methodologies and assumptions used to perform the risk assessment, the asset inventories used to perform the risk assessment, and finally conclusions on hazard risk. The conclusions on hazard risk consist of a prioritized ranking of hazards of concern.

This section gauges the likelihood of future occurrences based on past events and existing data. National Risk Index (NRI) Data was used with other data sources where available. This was to provide a wide range of vulnerability analyses and provide a standardized comparison to other communities across the United States to compare the levels of vulnerability to other communities. Because some of the hazards within this plan represent multiple types of precipitation or weather in an overall hazard category (Such as winter storm and freeze events may encompass ice, snow, snowstorms, etc.), the hazard names in the NRI data may vary. The NRI hazard names are listed as indicated in the NRI data to distinguish between multiple data sets that may fall under the same hazard category included in this plan.

The overall NRI Iredell County and Rowan County and the census tract level NRI data for probability is presented for each natural hazard where data is available. More information about census tracts and jurisdictional boundaries can be found in Section 3 and Figure 5- 2. Census tract level data is available in Appendix K. Please note that census tract numbers in the probability tables in this section of the report omit a "0" from the first number of each census tract. For example, census tract "060801" in Figure 5- 2 will be listed as "60801" in the census-

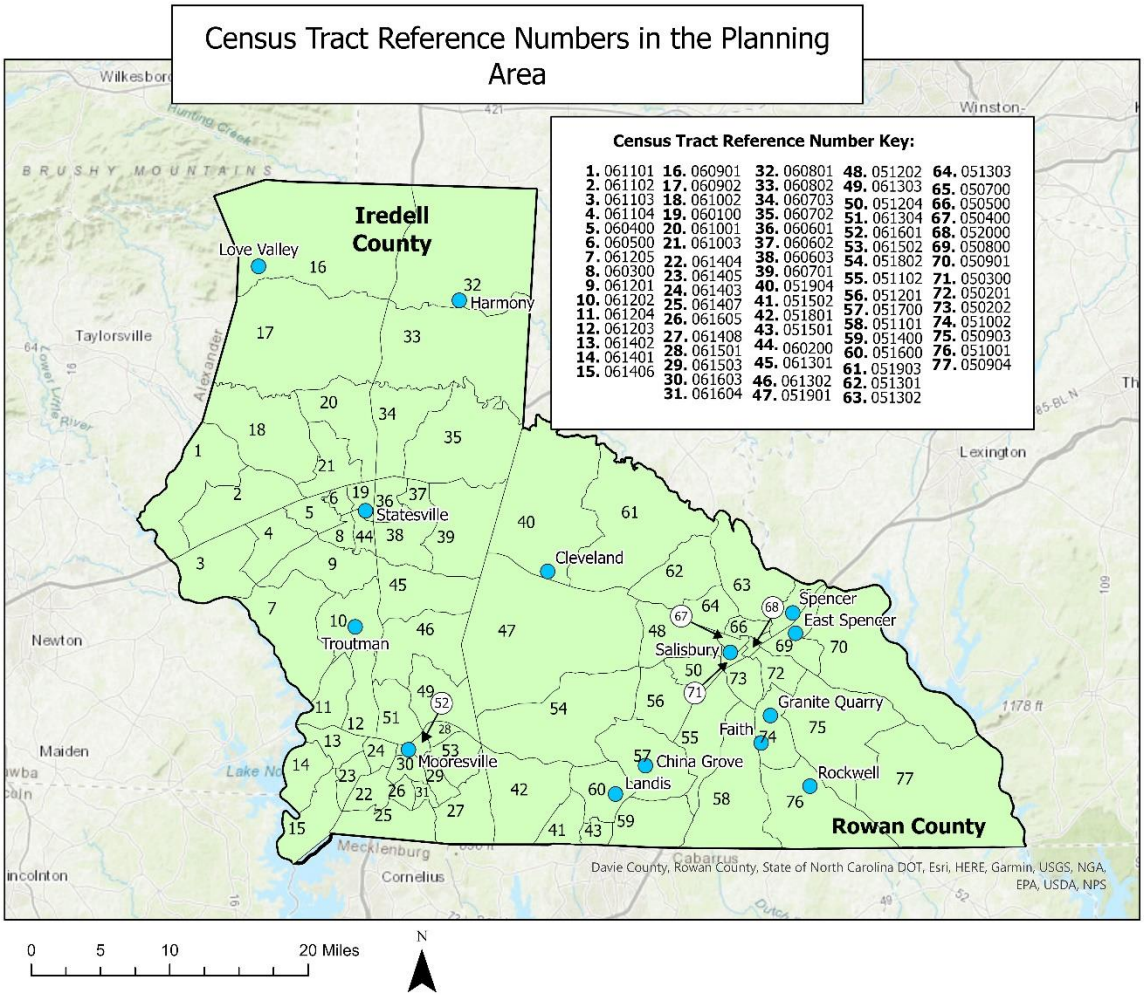


Figure 5- 2: Census tract reference numbers for NRI census level data throughout the planning area

level probability tables within this report.

The jurisdictional probability used for each natural hazard represents the average NRI probability and data for all census tracts that overlap the jurisdictional area, as NRI data is only offered at census tract levels and county levels. See Table 5- 2 to learn how jurisdictional averages were used to estimate jurisdictional NRI data form the census tract level data and Table 5- 3 for census tract numbers that were used to calculate jurisdictional level NRI data.

Table 5- 2: How jurisdictional NRI data was calculated based on census tracts for each natural hazard probability summary

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Based on NC Department of Transportation (NCDOT) city boundaries[1]	Sum of EAL for each census tract that overlaps the boundaries of the jurisdiction	Average of state percentile risk score of all census tracts that overlap the jurisdictional boundaries	Based on average state percentile risk score calculated	Average of national percentile risk score of all census tracts that overlap the jurisdictional boundaries	Based on average national percentile score calculated	Average of expected annual frequency for all census tracts that overlap the jurisdictional boundaries

Table 5- 3: census tracts used to calculate the jurisdictional NRI data

County	Jurisdiction	Census Tracts
Iredell	**Harmony**	60801, 60802
	Love Valley	60901
	Mooresville	61203, 61204, 61303, 61304, 61401, 61402, 61403, 61404, 61405, 61406, 61407, 61408, 61501, 61502, 61503, 61601, 61603, 61604, 61605
	Statesville	60100, 60200, 60300, 60400, 60500, 60601, 60602, 60603, 60701, 60702, 60703, 61001, 61002, 61003, 61102, 61104, 61201, 61301
	Troutman	61201, 61202, 61205, 61302
	Unincorporated	60902, 61101, 61103
Rowan	**China Grove**	51600, 51700, 51802
	Cleveland	51901, 51904
	East Spencer	50800, 50901, 52000
	Faith	50201, 51002, 51101
	Granite Quarry	50201, 50903, 51002, 51101
	Landis	51400, 51600, 51700
	Rockwell	51001
	Salisbury	50201, 50202, 50300, 50400, 50500, 50800, 51002, 51102, 51201, 51202, 51204, 51301, 51302, 51303, 52000
	Spencer	50500, 50700, 50800, 50901, 51302, 52000
	Unincorporated	50904, 51501, 51502, 51801, 51903

[1] N.C. Department of Transportation [NCDOT]. (2024). NCDOT City Boundaries (By NC OneMap) [Dataset]. NCDOT.gov. https://www.nconemap.gov/maps/ee098aeaf28d44138d63446fbdaac1ee/about

5.3.6. Future Vulnerability: Problem Statements

Changes in development or housing, climate change (see below), the natural environment, first responders, and continuity of operations. These are area-specific potential vulnerabilities considered to address people, changes in development or housing, the natural environment, first responders, and continuity of operations. These statements outline potential specific vulnerabilities for each hazard and how the unique nature of each hazard may impact the planning area and vulnerability. This includes considerations about the predicted future frequency and intensity of natural hazards and how this may impact the projected growth of the planning area in terms of people, changes in development or housing, the planning area economy, the natural environment, first responders, and climate change. Information about assets at risk including the high loss buildings, population, and buildings at risk of hazard events, see Appendix D.

5.3.6.1. People

This addresses the changes in vulnerability of population in the planning area for a hazard to understand the potential future risk of population. This includes impacts to vulnerable population groups, disproportionately impacted groups, and future changes to the population composition.

5.3.6.2. Changes in Development or Housing Characteristics

This addresses potential changes in development and housing characteristics in the planning are and the impact it may have on hazard resiliency in the future based on housing and development characteristics such as projected development, changes in housing characteristics, and changes in housing quantity.

5.3.6.3. Economy

Economic future impact addresses the hazards impact on the local economy and the potential future impacts based on current and future economic characteristics of the planning area.

5.3.6.4. Natural Environment

This addresses the future impacts to the natural environment based on the predicted frequency and severity of the natural hazard in the future.

5.3.6.5. First Responders

The impact to first responders may change based on future frequency, distribution, severity, and intensity of future natural hazard events. Therefore, it is important to understand how the capabilities of the first responders within the planning area may change to better mitigate and prepare for changing natural hazard risks.

5.3.6.6. Climate Change

These are problem statements aimed to reflect potential vulnerabilities associated with each hazard in climate change. Climate change implications were sourced from the NC State Climate

Science Report[2] and the Climate Science Special Report[3] from the 4th National Climate Assessment[4].

5.3.7. NRI Overview

Each natural hazard that is included in the NRI has associated risk values, risk scores, and risk ratings which are representative of the county or census tracts vulnerability to a natural hazard compares to other communities at the same level. To represent the risk more thoroughly to natural hazards that a community has compared to other communities at the same level, the NRI will be used to represent a community-based risk comparison outlined with risk values, ratings, and scores which are listed in the Table 5- 4. For more information about NRI Calculations and methodology, please refer to the NRI Technical Documentation[5].

The NRI hazard data presented for each hazard is summarized by county level and census tract level data. Because census tracts to do not always align with municipal boundaries, each of the municipalities that has an area of overlap with the census tract will be listed in table summaries. For more information about the census tracts in the planning area, including maps of census tracts and municipal boundaries used for this determination, see section 3.

Table 5- 4: NRI Overview from the NRI Technical Documentation

Term	Definition or Equation	
Annualized Frequency	Number of Recorded Events / Period of Record	
Historic Loss Ratio	**LRB** = Loss / Exposure	
	Loss	Loss, by consequence type (Building, population, or agriculture), experienced from each hazard occurrence documented in the data source
	Exposure	The total value, by consequence type (Building, population number, or agriculture), estimated to be exposed to the hazard occurrence in US Dollars (USD), or in population number or Population equivalent for population exposure.
Social Vulnerability	The susceptibility of social Groups to the adverse impacts of natural hazards including disproportionate death, injury, loss, or disruption of livelihood	

[2] Kenneth E. Kunkel et al., “North Carolina Climate Science Report” (North Carolina Institute for Climate Studies, September 2020), https://ncics.org/programs/nccsr/.
[3] DR Reidmiller et al., “Volume II: Impacts, Risks, and Adaptation in the United States,” Fourth National Climate Assessment (U.S. Global Change Research Program, n.d.), https://nca2018.globalchange.gov.
[4] U.S. Global Change Research Program [USGCRP]. (2018). Fourth National Climate Assessment (pp. 1–470). https://doi.org/10.7930/NCA4.2018
[5] Casey Zuzak et al., “National Risk Index: Technical Documentation” (Washington, DC: Federal Emergency Management Agency, March 2023), https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf.

Term	Definition or Equation	
	Data Source	Center for Disease Control and Prevention (CDC) / Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI)
Community Resilience	The ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.	
	Data Source	University of South Carolina's Hazards and Vulnerability Research Institute (HVRI)'s Baseline Resilience Indicators for Communities (HVRI BRIC)
Expected Annual Loss (EAL)	Represents the average economic loss in dollars resulting from natural hazards each year. It is calculated for each hazard type and quantifies loss for relevant consequence types: buildings, people, and agriculture	
	Equation	Exposure x Annualized Frequency x Historic Loss Ratio
Risk Value	Values for Risk and EAL in dollars, representing the community's average economic loss from natural hazards each year.	
Risk Score	Scores represent the national percentile ranking of the community's component value compared to all other communities at the same level, at the county or census tract level.	
Risk Rating	Ratings in one of five qualitative categories that describe the community's component value in comparison to all the other communities at the same level. These range from "Very Low" to "Very High".	
	Very High	80th to 100th percentile
	Relatively High	60th to 80th percentile
	Relatively Moderate	40th to 60th percentile
	Relatively Low	20th to 40th percentile
	Very Low	0th to 20th percentile

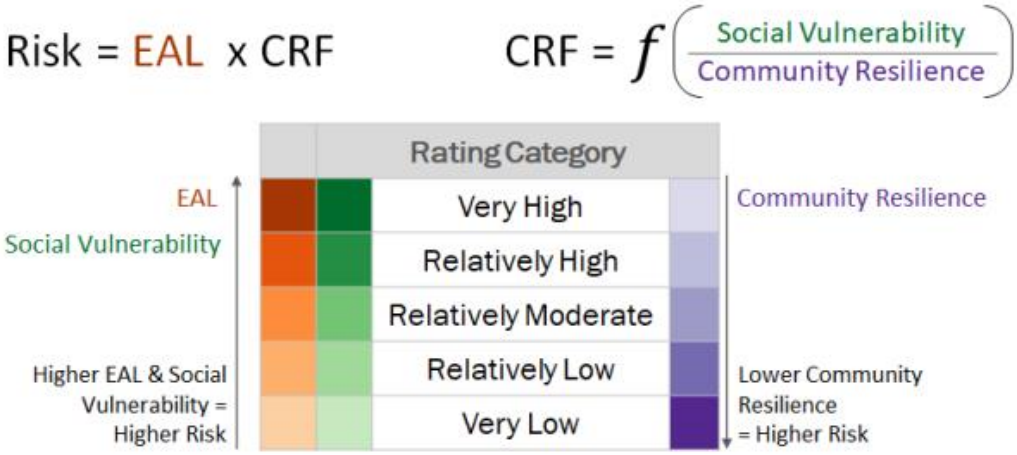


Illustration of Risk Component Scores

County	EAL	Social Vulnerability	Community Resilience	Risk
County 1	99.66	78.84	23.65	99.68
County 2	99.87	37.43	78.36	99.65
County 3	99.51	73.07	70.85	99.55
County 4	97.59	98.82	1.15	98.31
County 5	97.09	53.85	45.23	96.85
County 6	81.40	99.71	1.30	87.75
County 7	77.41	71.96	0.86	84.98
County 8	52.40	12.35	94.30	47.98
County 9	47.38	50.06	33.90	48.49
County 10	9.19	28.13	75.84	7.86

Figure 5- 3: NRI Qualitative Rating Legend and Illustration from the NRI Technical Documentation

Table 5- 5: Expected Annual Loss, Social Vulnerability Rating, and Community Resilience Rating for Iredell County and Rowan County

Category			Iredell	Rowan
National Risk Index -National Percentile	**EAL**	**Rating**	Relatively High	Relatively High
		Score	76.69	68.34
	Social Vulnerability	**Rating**	Relatively Moderate	Very High
		Score	40.32	87.36
	Community Resilience	**Rating**	Relatively Moderate	Relatively Moderate
		Score	54.49	49.05
National Risk Index -State Percentile	**EAL**	**Rating**	Relatively High	Relatively Moderate
		Score	64	49
	Social Vulnerability	**Rating**	Very Low	Relatively High
		Score	13	72
	Community Resilience	**Rating**	Relatively High	Relatively High
		Score	76	66
EAL	**Total**	Value	$15,439,824.17	$10,428,919.53
	Buildings	Value	$1 per $4.05K of building value *(0.0247%)*	$1 per $4.16K of building value *(0.024%)*
	Population	Value	1 per 427.02K people *(0.000234%)*	1 per 482.54K people *(0.00021%)*
	Agriculture	Value	$1 per $274.59 of agriculture value *(0.35%)*	$1 per $103.40 of agriculture value *(0.967%)*

Table 5- 6: Jurisdictional NRI Summary based on census tracts within each jurisdiction

Jurisdiction	EAL Total	Average Risk Score			
		State Percentile		National Percentile	
		Score	Rating	Score	Rating
Iredell County *(Unincorporated Area)*	$1,866,163.84	26.77	Relatively Low	23.61	Relatively Low
Harmony	$711,996.89	47.72	Relatively Moderate	26.15	Relatively Low

Jurisdiction	EAL Total	Average Risk Score			
		State Percentile		National Percentile	
		Score	Rating	Score	Rating
Love Valley	$99,450.76	3.42	Very Low	23.78	Relatively Low
Mooresville	$8,632,039.69	49.83	Relatively Moderate	26.08	Relatively Low
Statesville	$7,512,681.171	47.31	Relatively Moderate	24.05	Relatively Low
Troutman	$1,624,416.62	48.88	Relatively Moderate	21.71	Relatively Low
Rowan County *(Unincorporated Area)*	$772,563.32	46.62	Relatively Moderate	20.11	Relatively Low
China Grove	$1,401,517.90	53.43	Relatively Moderate	23.84	Relatively Low
Cleveland	$676,744.29	36.84	Relatively Low	26.23	Relatively Low
East Spencer	$1,111,928.80	39.19	Relatively Low	19.87	Very Low
Faith	$1,173,207.95	43.82	Relatively Moderate	25.14	Relatively Low
Granite Quarry	$1,432,846.29	40.37	Relatively Moderate	24.56	Relatively Low
Landis	$1,247,354.01	45.26	Relatively Moderate	24.41	Relatively Low
Rockwell	$338,506.48	40.83	Relatively Moderate	17.94	Very Low
Salisbury	$5,556,401.08	38.98	Relatively Low	20.98	Relatively Low
Spencer	$2,325,249.89	41.41	Relatively Moderate	20.10	Relatively Low

Table 5- 7: Overall EAL, Social Vulnerability Rating, Community Resilience Rating for each census tract within the planning area

County	Census Tract	Jurisdiction(s)	Social Vulnerability Index		Community Resilience Risk Index		EAL Risk Index		EAL Total	National Risk Index – State Percentile	
			Rating	Score	Rating	Score	Rating	Score		Rating	Score
Iredell	60100	Statesville	**Relatively High**	79.68	**Relatively Moderate**	42.76	**Relatively Moderate**	44.48	$426,131.66	**Relatively High**	65.49

County	Census Tract	Jurisdiction(s)	Social Vulnerability Index		Community Resilience Risk Index		EAL Risk Index		EAL Total	National Risk Index – State Percentile	
			Rating	Score	Rating	Score	Rating	Score		Rating	Score
	60200		Very High	89.84	Relatively Moderate	42.76	Very Low	9.79	$130,325.76	Relatively Low	20.68
	60300		Very High	96.20	Relatively Moderate	42.76	Very Low	15.20	$171,670.14	Relatively Low	34.96
	60400		Very High	87.69	Relatively Moderate	42.76	Very Low	39.84	$378,444.42	Relatively High	63.80
	60500		Relatively High	72.41	Relatively Moderate	42.76	Very Low	33.51	$318,904.35	Relatively Moderate	51.77
	60601		Very High	82.67	Relatively Moderate	42.76	Relatively Moderate	43.20	$412,485.79	Relatively High	65.11
	60602		Very Low	13.34	Relatively Moderate	42.76	Very Low	11.10	$140,348.86	Very Low	5.15
	60603		Very High	90.37	Relatively Moderate	42.76	Very Low	25.68	$251,448.19	Relatively Moderate	48.27
	60701		Relatively Moderate	56.64	Relatively Moderate	42.76	Very Low	21.31	$217,355.18	Relatively Low	30.00
	60702		Relatively Moderate	56.15	Relatively Moderate	42.76	Very Low	29.06	$280,600.22	Relatively Moderate	40.08
	60703		Relatively Moderate	54.15	Relatively Moderate	42.76	Very Low	30.09	$288,905.91	Relatively Moderate	40.83
	60801	Harmony	Relatively Low	39.11	Relatively Moderate	42.76	Very Low	28.30	$273,754.98	Relatively Low	33.98
	60802		Relatively Low	36.04	Relatively Moderate	42.76	Very Low	27.59	$267,536.33	Relatively Low	31.99
	60901	Love Valley	Relatively High	62.81	Relatively Moderate	42.76	Very Low	28.09	$271,910.78	Relatively Moderate	41.24
	60902	Unincorporated	Relatively Moderate	41.08	Relatively Moderate	42.76	Very Low	30.61	$293,161.51	Relatively Low	37.07
	61001	Statesville	Relatively Moderate	57.79	Relatively Moderate	42.76	Very Low	29.49	$284,470.04	Relatively Moderate	41.65
	61002		Relatively Low	38.39	Relatively Moderate	42.76	Very Low	28.09	$271,923.15	Relatively Low	33.61
	61003		Relatively High	77.00	Relatively Moderate	42.76	Very Low	31.31	$299,364.31	Relatively Moderate	50.41
	61101	Unincorporated	Relatively Low	25.97	Relatively Moderate	42.76	Very Low	16.54	$182,156.48	Very Low	14.02
	61102	Statesville	Relatively Moderate	57.97	Relatively Moderate	42.76	Very Low	23.72	$236,213.00	Relatively Low	33.76
	61103	Unincorporated	Relatively Moderate	44.43	Relatively Moderate	42.76	Very Low	15.42	$173,314.05	Very Low	17.07

County	Census Tract	Jurisdiction(s)	Social Vulnerability Index		Community Resilience Risk Index		EAL Risk Index		EAL Total	National Risk Index – State Percentile	
			Rating	Score	Rating	Score	Rating	Score		Rating	Score
	61104	Statesville	Relatively Low	37.13	Relatively Moderate	42.76	Very Low	14.26	$164,328.11	Very Low	13.83
	61201	Statesville, Troutman	Relatively Low	36.48	Relatively Moderate	42.76	Relatively Moderate	42.19	$402,582.13	Relatively Moderate	49.44
	61202	Troutman	Relatively Moderate	43.43	Relatively Moderate	42.76	Relatively Moderate	43.14	$411,767.68	Relatively Moderate	53.12
	61203	Mooresville	Relatively Moderate	53.86	Relatively Moderate	42.76	Relatively Moderate	52.72	$525,592.21	Relatively High	65.60
	61204		Very Low	3.07	Relatively Moderate	42.76	Relatively Moderate	50.06	$490,348.65	Relatively Low	38.53
	61205	Troutman	Relatively Low	25.74	Relatively Moderate	42.76	Very Low	38.25	$363,921.95	Relatively Moderate	41.58
	61301	Statesville	Relatively Moderate	50.09	Relatively Moderate	42.76	Very Low	14.63	$167,121.51	Very Low	17.22
	61302	Troutman	Relatively Low	31.44	Relatively Moderate	42.76	Very Low	33.45	$318,372.56	Relatively Low	37.78
	61303	Mooresville	Very Low	11.86	Relatively Moderate	42.76	Relatively Moderate	58.13	$608,345.33	Relatively Moderate	56.47
	61304		Relatively Moderate	49.70	Relatively Moderate	42.76	Relatively Moderate	52.81	$526,798.54	Relatively High	64.14
	61401		Very Low	1.71	Relatively Moderate	42.76	Relatively Moderate	53.83	$541,897.31	Relatively Moderate	40.04
	61402		Relatively Low	36.19	Relatively Moderate	42.76	Relatively High	62.12	$679,923.89	Relatively High	68.65
	61403		Relatively Low	37.94	Relatively Moderate	42.76	Relatively Moderate	46.39	$446,565.65	Relatively Moderate	54.32
	61404		Very Low	17.69	Relatively Moderate	42.76	Relatively Moderate	41.25	$392,550.02	Relatively Moderate	41.20
	61405		Very Low	4.04	Relatively Moderate	42.76	Very Low	34.91	$331,794.80	Relatively Low	23.98
	61406		Very Low	3.19	Relatively Moderate	42.76	Relatively High	60.72	$654,523.51	Relatively Moderate	51.62
	61407		Relatively Low	37.75	Relatively Moderate	42.76	Relatively Moderate	40.18	$382,125.63	Relatively Moderate	47.74
	61408		Very Low	4.80	Relatively Moderate	42.76	Relatively Moderate	41.60	$396,159.25	Relatively Low	32.11
	61501		Relatively Moderate	52.12	Relatively Moderate	42.76	Very Low	32.18	$306,916.25	Relatively Moderate	43.20
	61502		Relatively Low	35.62	Relatively Moderate	42.76	Very Low	39.65	$376,676.59	Relatively Moderate	46.54

County	Census Tract	Jurisdiction(s)	Social Vulnerability Index		Community Resilience Risk Index		EAL Risk Index		EAL Total	National Risk Index – State Percentile	
			Rating	Score	Rating	Score	Rating	Score		Rating	Score
	61503		Relatively Low	31.93	Relatively Moderate	42.76	Very Low	37.80	$359,707.65	Relatively Moderate	43.57
	61601		Very High	87.83	Relatively Moderate	42.76	Very Low	34.77	$330,542.76	Relatively Moderate	58.68
	61603		Relatively High	64.62	Relatively Moderate	42.76	Relatively Moderate	40.13	$381,454.13	Relatively Moderate	56.28
	61604		Relatively Low	22.75	Relatively Moderate	42.76	Very Low	5.96	$99,450.76	Very Low	2.63
	61605		Very Low	5.93	Relatively Moderate	42.76	Very Low	20.31	$209,932.16	Very Low	10.38
Rowan	50201	Faith, Granite Quarry, Salisbury	Very High	80.16	Relatively Low	37.63	Very Low	39.06	$271,288.38	Relatively Moderate	47.63
	50202	Salisbury	Very High	95.28	Relatively Low	37.63	Relatively Moderate	66.24	$507,393.62	Relatively High	73.23
	50300		Very High	87.38	Relatively Low	37.63	Very Low	40.43	$26 2,906.25	Relatively Moderate	49.17
	50400		Very High	92.87	Relatively Low	37.63	Very Low	41.25	$253,071.08	Relatively Moderate	50.00
	50500	Salisbury, Spencer	Relatively Low	38.38	Relatively Low	37.63	Relatively Moderate	48.84	$493,878.68	Relatively Moderate	58.80
	50700	Spencer	Very High	82.73	Relatively Low	37.63	Very Low	35.08	$237,674.97	Relatively Moderate	43.23
	50800	East Spencer, Salisbury, Spencer	Very High	87.29	Relatively Low	37.63	Very Low	26.72	$178,122.19	Relatively Low	32.74
	50901	East Spencer, Spencer	Relatively High	64.64	Relatively Low	37.63	Very Low	40.78	$324,286.83	Relatively Moderate	49.59
	50903	Granite Quarry	Relatively Moderate	40.68	Relatively Low	37.63	Very Low	39.29	$374,574.37	Relatively Moderate	47.82
	50904	Unincorporated	Relatively Low	34.64	Relatively Low	37.63	Very Low	19.68	$217,008.22	Relatively Low	23.12
	51001	Rockwell	Relatively High	77.59	Relatively Low	37.63	Relatively Moderate	60.29	$503,204.58	Relatively High	69.32
	51002	Faith, Granite Quarry, Salisbury	Relatively Moderate	53.40	Relatively Low	37.63	Very Low	41.89	$363,977.93	Relatively Moderate	51.02
	51101		Relatively Low	35.50	Relatively Low	37.63	Relatively Moderate	38.83	$384,549.31	Relatively Moderate	47.48
	51102	Salisbury	Relatively High	60.07	Relatively Low	37.63	Very Low	38.47	$315,864.28	Relatively Moderate	47.11

County	Census Tract	Jurisdiction(s)	Social Vulnerability Index		Community Resilience Risk Index		EAL Risk Index		EAL Total	National Risk Index – State Percentile	
			Rating	Score	Rating	Score	Rating	Score		Rating	Score
	51201		Relatively High	67.49	Relatively Low	37.63	Very Low	47.07	$374,993.82	Relatively Moderate	56.73
	51202		Relatively High	73.76	Relatively Low	37.63	Very Low	36.24	$265,876.54	Relatively Moderate	44.55
	51204		Very High	88.33	Relatively Low	37.63	Very Low	42.96	$278,445.67	Relatively Moderate	52.33
	51301		Relatively High	63.49	Relatively Low	37.63	Very Low	14.91	$143,788.40	Very Low	15.75
	51302	Salisbury, Spencer	Relatively Moderate	41.36	Relatively Low	37.63	Very Low	28.70	$276,522.27	Relatively Low	35.30
	51303	Salisbury	Very High	84.05	Relatively Low	37.63	Relatively Moderate	54.39	$399,424.32	Relatively High	64.44
	51400	Landis	Very High	83.19	Relatively Low	37.63	Relatively Moderate	54.80	$406,965.64	Relatively High	64.89
	51501	Unincorporated	Very High	92.57	Relatively Low	37.63	Very Low	34.74	$212,753.79	Relatively Moderate	42.56
	51502		Relatively Moderate	59.66	Relatively Low	37.63	Very Low	17.18	$163,213.64	Very Low	19.55
	51600	China Grove, Landis	Very High	81.40	Relatively Low	37.63	Relatively Moderate	58.95	$467,146.45	Relatively High	68.50
	51700		Relatively High	76.76	Relatively Low	37.63	Relatively Moderate	59.81	$499,593.01	Relatively High	68.95
	51801	Unincorporated	Relatively High	69.23	Relatively Low	37.63	Very Low	42.17	$324,079.76	Relatively Moderate	51.50
	51802	China Grove	Relatively Moderate	52.51	Relatively Low	37.63	Relatively Moderate	51.69	$480,004.84	Relatively High	61.95
	51901	Cleveland	Relatively Low	31.82	Relatively Low	37.63	Relatively Moderate	54.98	$616,163.30	Relatively High	65.23
	51903	Unincorporated	Relatively High	76.76	Relatively Low	37.63	Very Low	35.93	$256,803.40	Relatively Moderate	44.17
	51904	Cleveland	Relatively High	60.96	Relatively Low	37.63	Very Low	37.18	$302,615.49	Relatively Moderate	45.49
	52000	East Spencer, Salisbury, Spencer	Very High	90.55	Relatively Low	37.63	Very Low	43.07	$272,728.52	Relatively Moderate	52.44

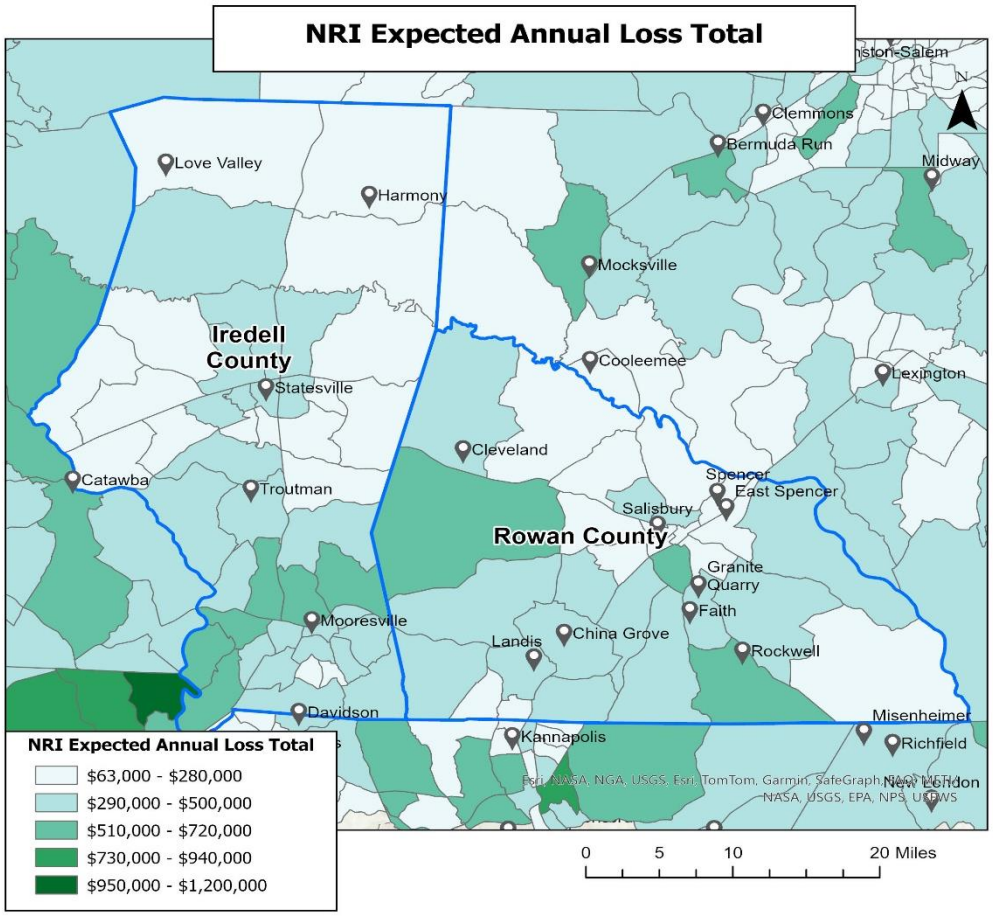


Figure 5- 4: NRI EAL Total by Census Tract for the Planning Area

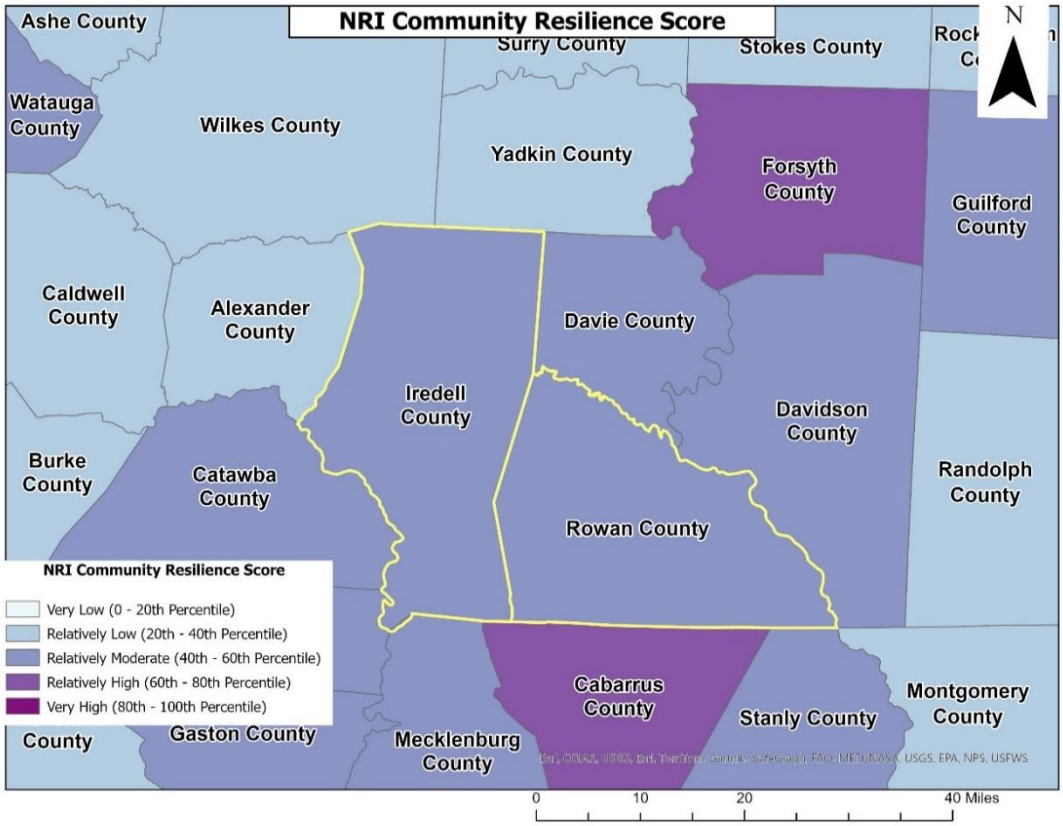


Figure 5- 5: NRI Community Resilience Score for the planning area and surrounding counties

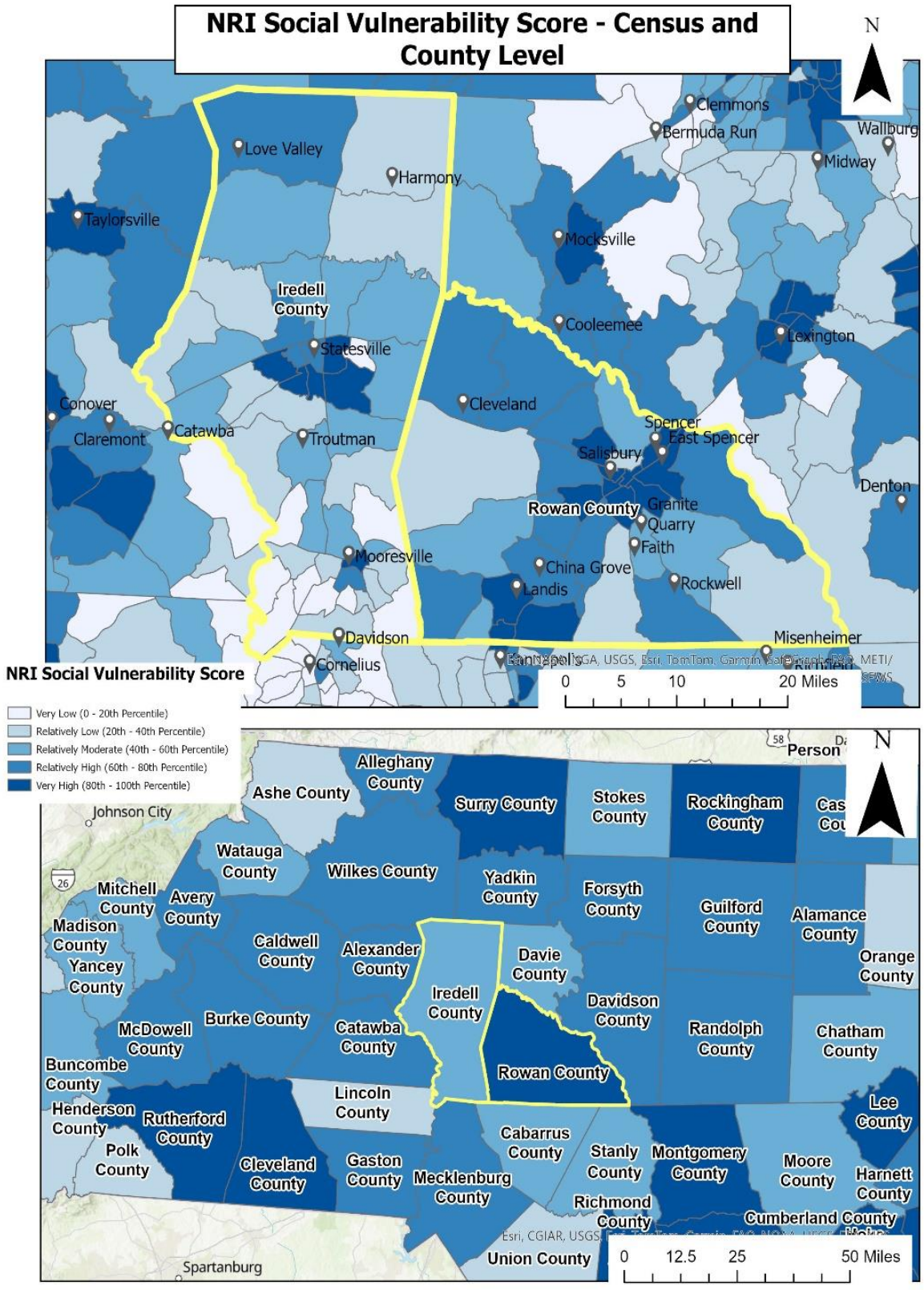


Figure 5- 6: NRI Social Vulnerability Score for the planning area and surrounding counties by county and census tract.

5.4. Asset Inventory

An inventory of geo-referenced assets within the Iredell Rowan counties and jurisdictions was compiled to identify and characterize those properties potentially at risk to the identified hazards. By understanding the type and number of assets that exist and where they are in relation to known hazard areas, the relative risk and vulnerability for such assets can be assessed. Under this assessment, two categories of physical assets were created and then further assessed through Geographic Information Services (GIS) analysis.

5.4.8. Physical and Improved Assets

- **Buildings, people, and high loss buildings** at risk of spatially defined hazards including tornados, earthquakes, flooding, hurricane and tropical storms, and severe thunderstorms can be found in Appendix D. This analysis is from NCEM's Risk Management Tool (RMT) which uses web-based tools and a core geodatabase to incorporate multiple applications and analyze the properties, population, and high loss buildings at risk of hazards based previous hazard occurrences. The quantitative analysis in the RMT involves use of the iRISK database, which provides modeled damage estimates for flood, wind, wildfire, and other hazards. iRISK data is not available for every hazard, but all available information is included in Appendix D.
- **Critical Facilities**: Critical facilities vary by jurisdiction. When provided, the critical facilities provided by the jurisdiction are used in this section. Critical facilities were retrieved from NC OneMap[6] and can be seen in Figure 5- 7 and are listed in Appendix F.

[6] NC OneMap. (n.d.). NC OneMap. https://www.nconemap.gov/

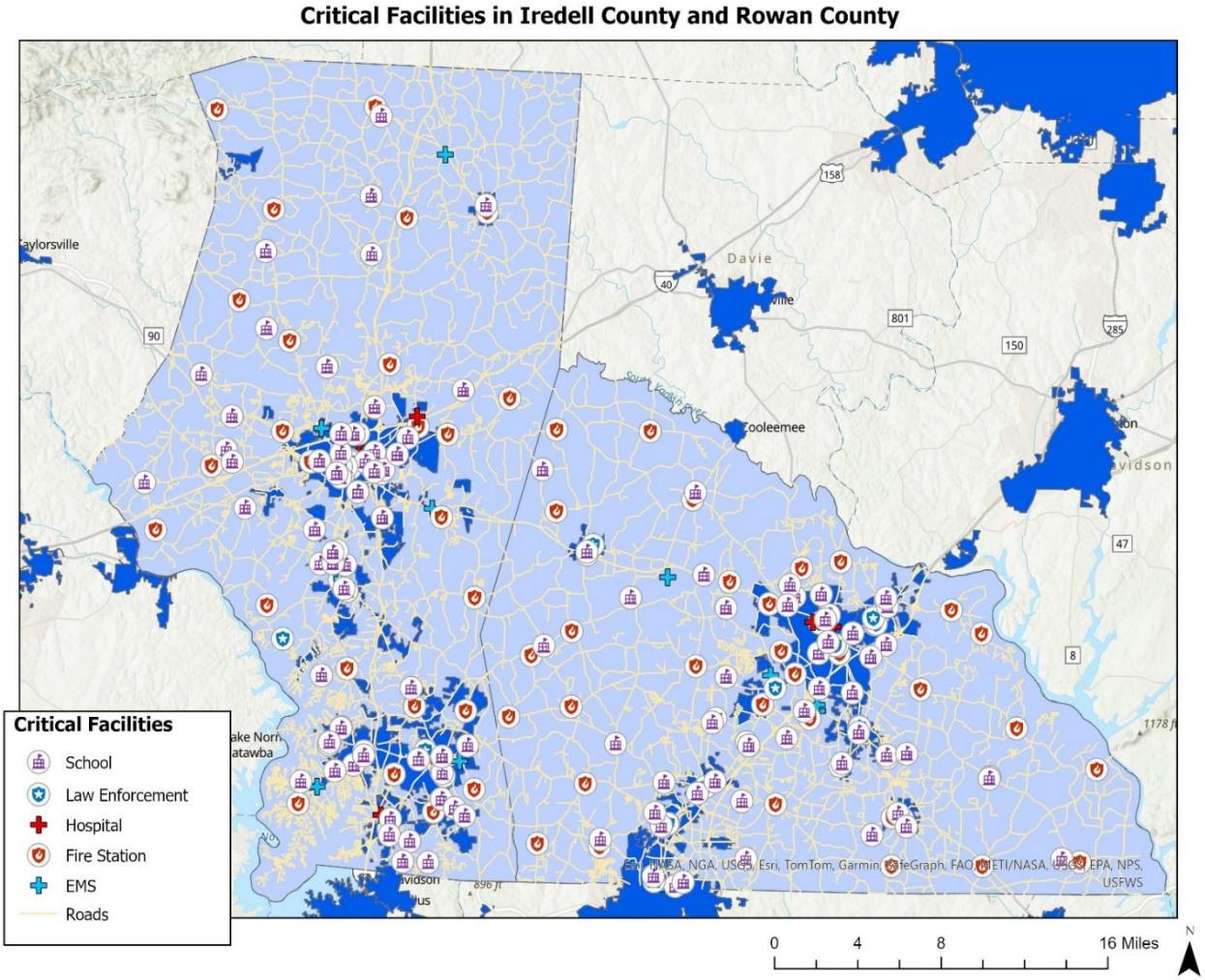


Figure 5- 7: Critical Facilities in Iredell County and Rowan County from NC OneMap. See Appendix F for Critical Facilities information in the planning area and source information from NC OneMap.

Atmospheric Hazards

5.5. Drought

5.5.1. Hazard Description

Drought is a normal part of all climatic regions, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period, usually a season or more in length. Elevated temperatures, high winds, and low humidity can exacerbate drought conditions. In addition, human actions and demands for water resources can hasten drought-related impacts.

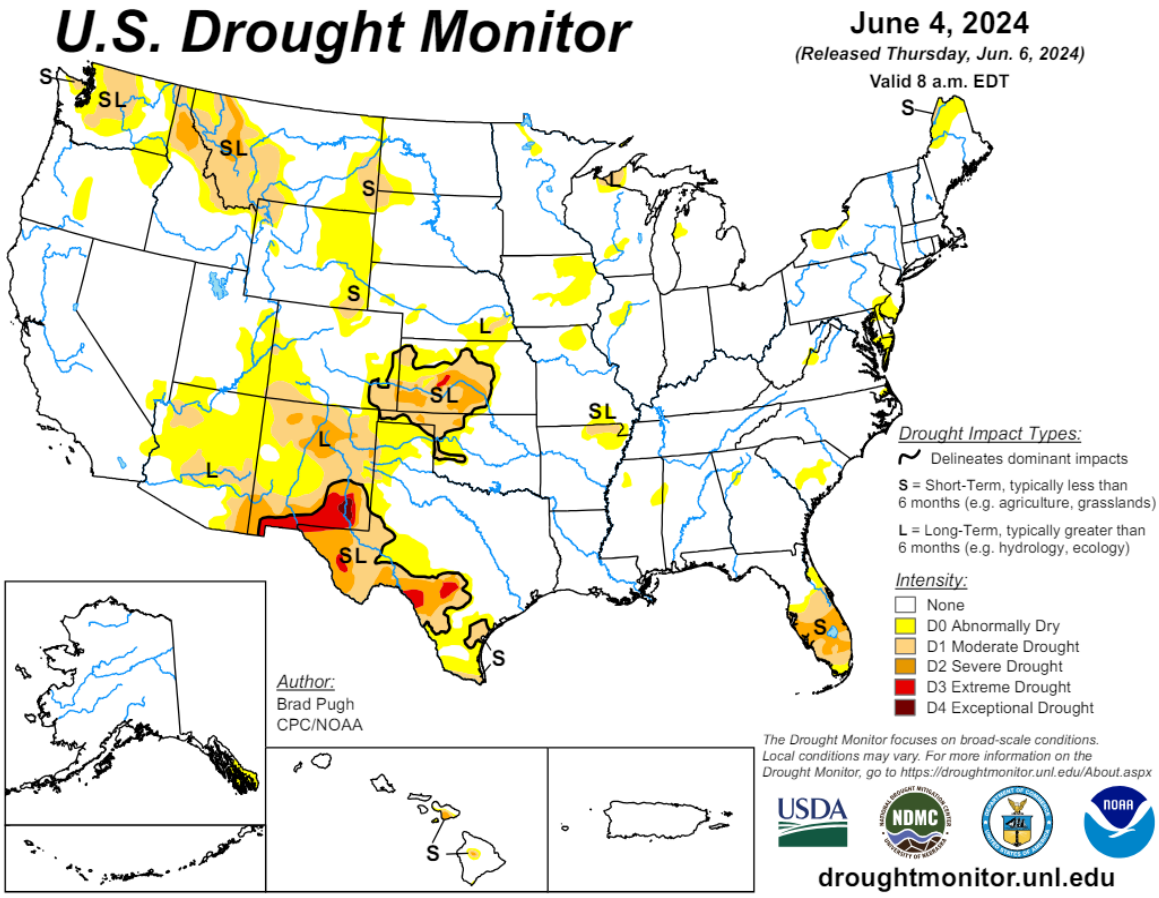


Figure 5- 8: US Drought Monitor for June 4, 2024

Droughts are typically classified into one of four types: 1) meteorological, 2) hydrologic, 3) agricultural, or 4) socioeconomic. Table 5- 8 presents definitions for these types of droughts.

Table 5- 8: Drought Classification Definitions[7]

Meteorological Drought	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrologic Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
Agricultural Drought Soil	moisture deficiencies relative to water demands of plant life, usually crops.
Socioeconomic Drought	The effect of water demands exceeding the supply due to a weather-related supply shortfall.

[7] Source: Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy, FEMA

Droughts are slow-onset hazards, but, over time, can have very damaging effects on crops, municipal water supplies, recreational uses, and wildlife. If drought conditions extend over several years, the direct and indirect economic impact can be significant.

The Palmer Drought Severity Index (PDSI) is based on observed drought conditions and ranges from -0.5 (incipient dry spell) to -4.0 (extreme drought). Drought is described on a scale of D0 to D4:

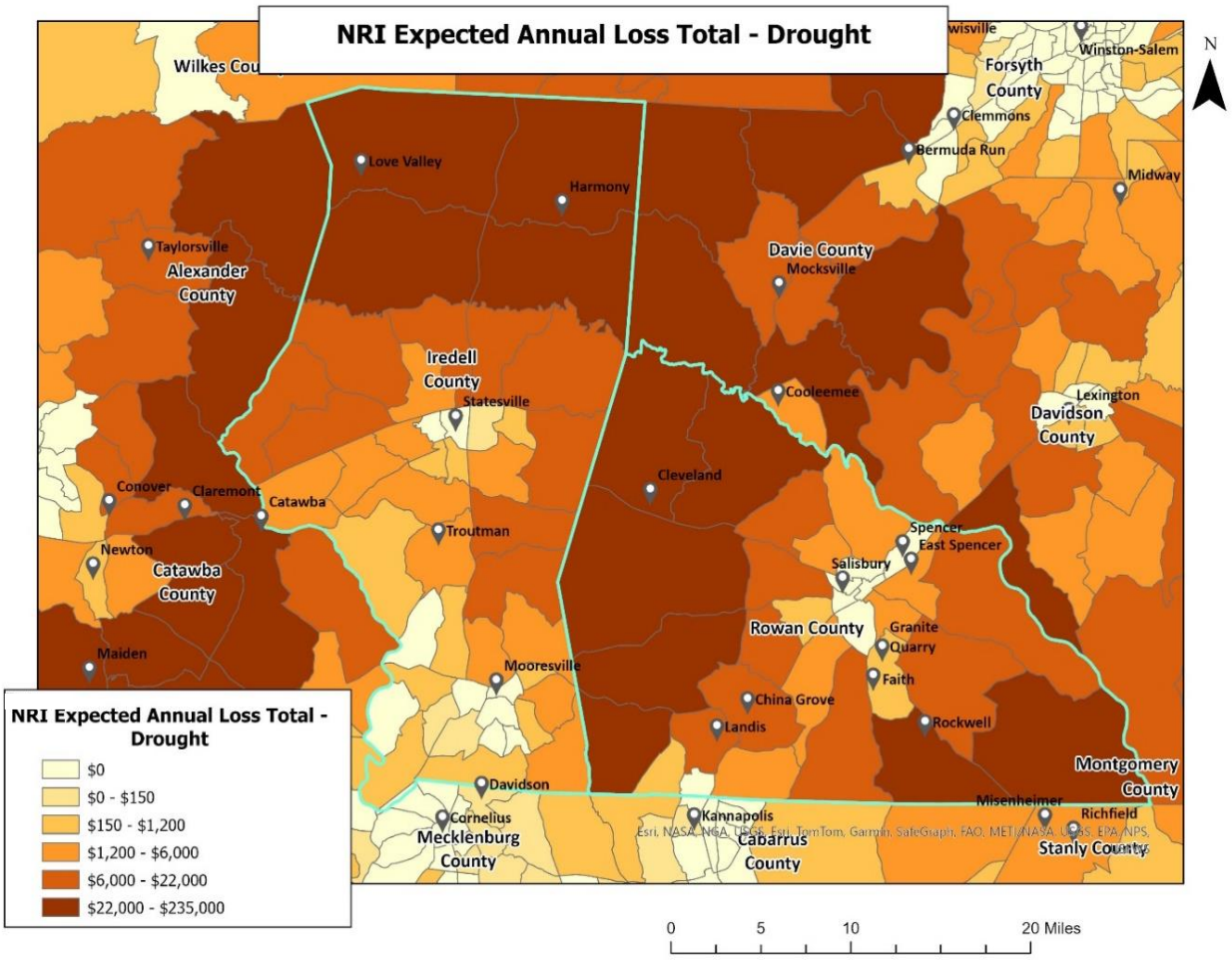


Figure 5- 9: NRI Expected Annual Loss from Drought per Census Tract

- D0: Abnormally Dry
- D1: Moderate Drought
- D2: Severe Drought
- D3: Extreme Drought
- D4: Exceptional Drought

Evident in Figure 5- 8, the PDSI Summary Map for the United Stated, drought affects most areas of the United States but is less severe in the Eastern United States.

5.5.2. Location

Drought typically covers a large area and cannot be confined to any geographic or political boundaries. According to the PDSI (Figure 5- 8), west-central North Carolina has a relatively low risk for drought hazard. However, local areas may experience much more severe and/or frequent drought events than what is represented on the PDSI map. Furthermore, it is assumed that the Iredell Rowan Region would be uniformly exposed to drought, making the spatial extent potentially widespread. It is also notable that drought conditions typically do not cause significant damage to the built environment.

The drought hazard maps(Figure 5- 10, Figure 5- 11, Figure 5- 12) represent the weekly drought data from year 2000 to present was downloaded from the US Drought monitor. This data is in the form of a nonoverlapping polygon layer that has 6 drought classifications from ranging from No Drought to Exceptional Drought. Each week of data was clipped to the study area. The overlapping data layers for each week of the study area were joined together and a count based on the drought classification was added to joined layer. A pie chart was created to show the map

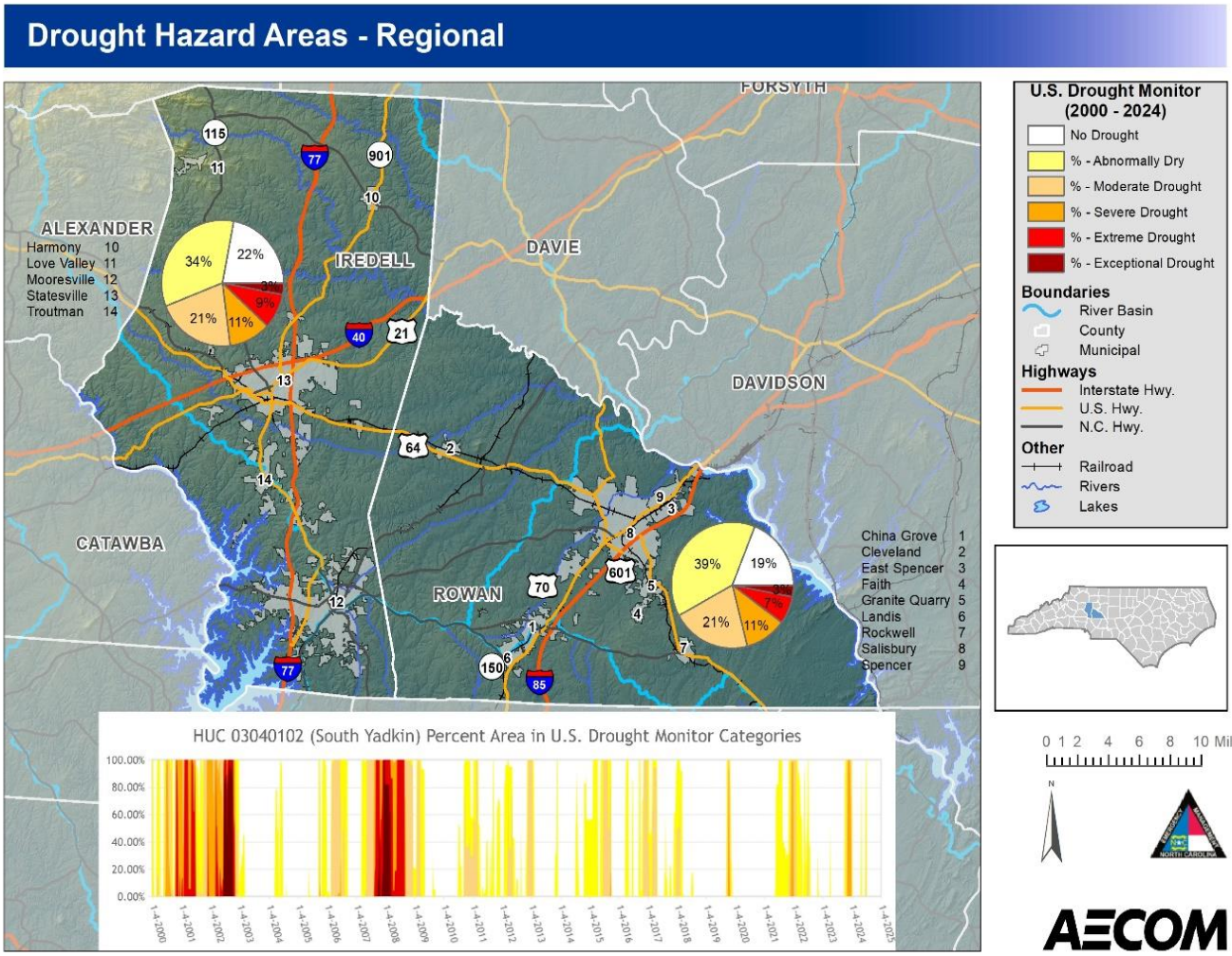


Figure 5- 10: Drought hazard areas in the planning area

user the percentage of each drought classification the study area experienced from the year 2000 to present.

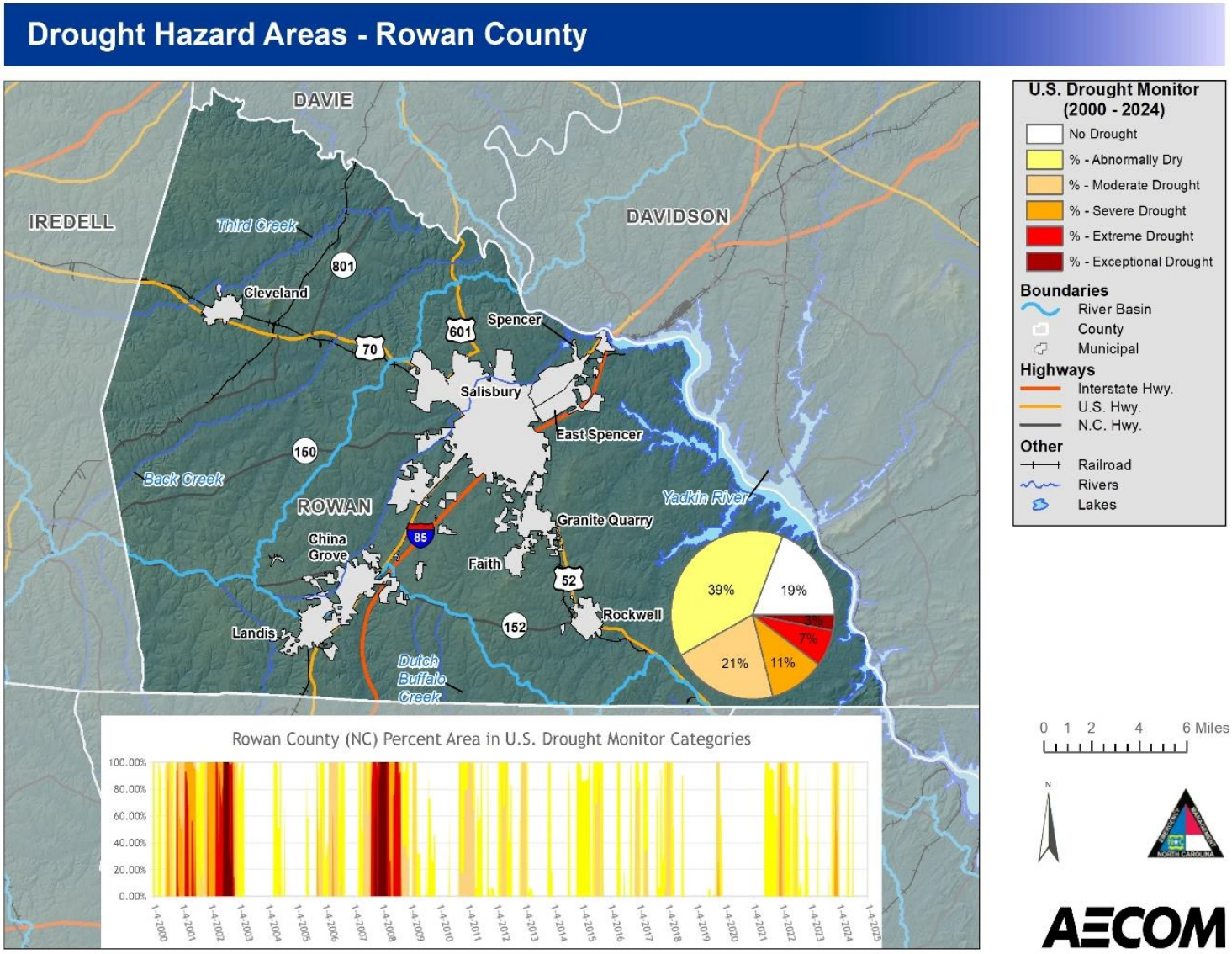


Figure 5- 11: Drought Hazard Areas in Rowan County

5.5.3. Extent

According to the North Carolina Drought Monitor, both counties and all jurisdictions in the planning area in the Iredell Rowan Region had drought occurrences (including abnormally dry) in all the last 24 years (2000-2024) (Table 5- 9) It should be noted that the North Carolina Drought Monitor also estimates what percentage of the county is in each classification of drought severity. For example, the most severe classification reported may be exceptional, but most of the county may be in a less severe condition.

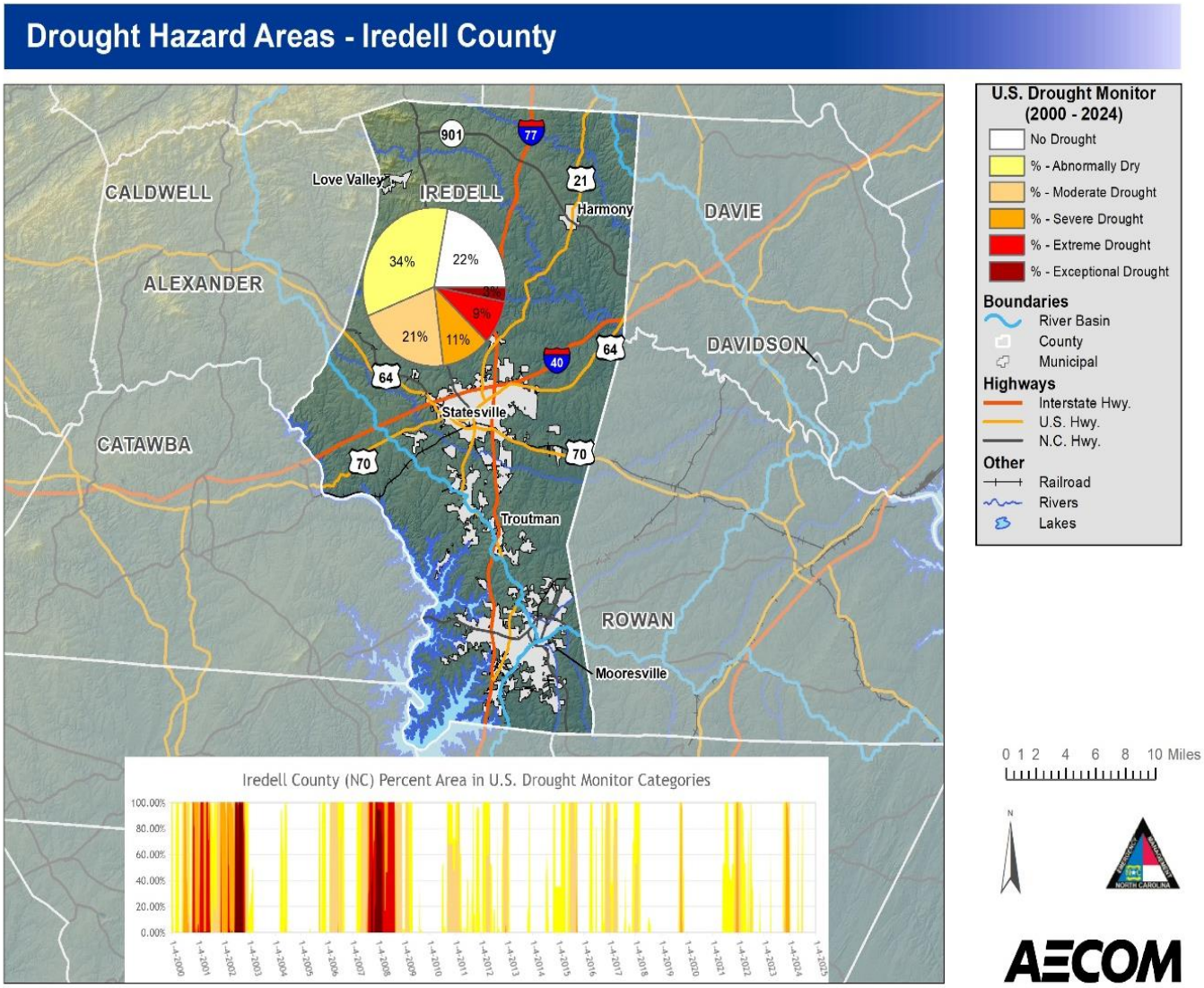


Figure 5- 12: Drought Hazard Areas in Iredell County

5.5.4. Historical Occurrences

Data from the North Carolina Drought Management Advisory Council and National Climatic Data Center were used to ascertain historical drought events in the Iredell Rowan Region. The North Carolina Drought Management Advisory Council reports data on North Carolina drought conditions from 2000 to 2024 through the North Carolina Drought Monitor. It classifies drought conditions by county on a scale of D0 to D4:

- D0: Abnormally Dry
- D1: Moderate Drought
- D2: Severe Drought
- D3: Extreme Drought
- D4: Exceptional Drought

Table 5- 9: USDA Drought in Iredell[8] and Rowan[9] Counties from January 2018- December 16, 2024, and the average percentage of area in each category of drought throughout the drought event. Data from the National integrated Drought Information System (NIDIS) and the National Drought Mitigation Center (NDMC)

County	Average Percent Area During Period of Drought					Start Date	End Date	Days
	D0	D1	D2	D3	D4			
Iredell	100	34.82	0	0	0	1/2/2018	3/12/2018	60
	9.53	0	0	0	0	7/3/2018	8/6/2018	30
	82.10	51.91	18.91	0	0	9/10/2019	11/25/2019	66
	20.66	24.67	9.48	0	0	5/25/2021	4/25/2022	288
	55.6	0	0	0	0	5/10/2022	5/30/2022	20
	52.39	10.67	0	0	0	6/7/2022	8/1/2022	48
	22.12	0	0	0	0	11/1/2022	11/14/2022	12
	66.93	0	0	0	0	4/4/2023	4/10/2023	6
	99.96	72.58	45.97	0	0	10/3/2023	1/8/2024	84
	57.64	0	0	0	0	4/23/2024	5/6/2024	12
	91.68	51.09	23.61	0	0	6/18/2024	8/12/2024	48
	0.11	0	0	0	0	9/10/2024	9/16/2024	6
	100	27.57	0	0	0	11/5/2024	12/16/2024	36
Rowan	91.83	49.51	0	0	0	1/2/2018	3/26/2018	72
	54.49	0	0	0	0	7/3/2018	8/6/2018	30
	5.56	0	0	0	0	6/11/2019	8/6/2019	24
	1.15	0	0	0	0	8/13/2019	8/26/2019	12
	77.94	43.04	4.34	0	0	9/10/2019	12/2/2019	72
	92.12	26.62	9.23	0	0	5/25/2021	4/25/2022	288
	61.99	13.16	0	0	0	5/17/2022	9/12/2022	102
	50.97	0	0	0	0	10/18/2022	12/5/2022	42
	100	0	0	0	0	4/4/2023	4/10/2023	6
	26.41	0	0	0	0	8/22/2023	8/28/2023	6
	100	61.51	22.04	0	0	10/3/2023	1/8/2024	84
	81.54	0	0	0	0	4/16/2024	5/6/2024	18
	82.16	40.43	7.59	0	0	6/18/2024	8/12/2024	48
	100	5.58	0	0	0	11/5/2024	12/16/2024	36

5.5.5. Probability of Future Occurrences

[8] NOAA, National Integrated Drought Information System [NIDIS], National Drought Mitigation Center [NDMC], & U.S. Department of Agriculture [USDA]. (2024). Historical Conditions for Iredell County [Dataset]. In Drought.gov. NIDIS. https://www.drought.gov/states/north-carolina/county/iredell
[9] U.S. Department of Agriculture, NOAA, National Integrated Drought Information System [NIDIS], & National Drought Mitigation Center [NDMC]. (2024). Historical Conditions for Rowan County [Dataset]. In Drought.gov. Drought.gov. https://www.drought.gov/states/north-carolina/county/rowan

The NRI reports that Iredell County is at a relatively low EAL Rating and Relatively Low risk index rating, but Rowan County is at a relatively moderate EAL Rating and Risk index Rating. It is estimated that the frequency of drought is 29 events per year in Iredell County and 29.3 events in Rowan County, with $285,000 EAL in Iredell County and $748,000 EAL in Rowan County. The period of record for the NRI probability is from 2000-2021. For more detailed information about census tract level NRI data, see Appendix K and for information about census tracts in the planning area, see Section 3.

The jurisdictional summaries in Table 5- 11, based on census tract level data that is within each jurisdiction in the planning area,

Table 5- 10: NRI values for drought in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Low	Relatively Moderate
	Value	$285,000	$748,000
	Frequency	29 Events per Year	29.3 Events per Year
Risk Index	Rating	Relatively Low	Relatively Moderate
	Score	81.7	92.7

Table 5- 11: NRI drought impacts based on census tracts within each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$29,039.57	59.90	Relatively Moderate	58.38	Relatively Moderate	29.43
Harmony	$0	0	Very Low	0	Very Low	29.59
Love Valley	$0	0	Very Low	0	Very Low	29.91
Mooresville	$698,962.72	83.00	Very High	84.69	Very High	29.61
Statesville	$38,815.44	60.27	Relatively High	63.06	Relatively High	29.29
Troutman	$32,926.33	89.83	Very High	91.60	Very High	28.56
Rowan County *(Unincorporated Area)*	$0	0	Very Low	0	Very Low	28.64
China Grove	$2,205.26	81.73	Very High	80.42	Very High	30.23
Cleveland	$11,287.88	89.60	Very High	88.92	Very High	30.07
East Spencer	$8,194.15	86.83	Very High	89.59	Very High	29.38
Faith	$81,086.48	63.94	Relatively High	61.01	Relatively High	27.89
Granite Quarry	$92,666.97	71.17	Relatively High	68.05	Relatively High	28.16
Landis	$5,076.00	84.27	Very High	83.63	Very High	29.91
Rockwell	$9,664.51	92.26	Very High	90.46	Very High	29.27
Salisbury	$206,419.83	79.13	Relatively High	79.10	Relatively High	28.89
Spencer	$24,374.54	71.25	Relatively High	72.61	Relatively High	29.43

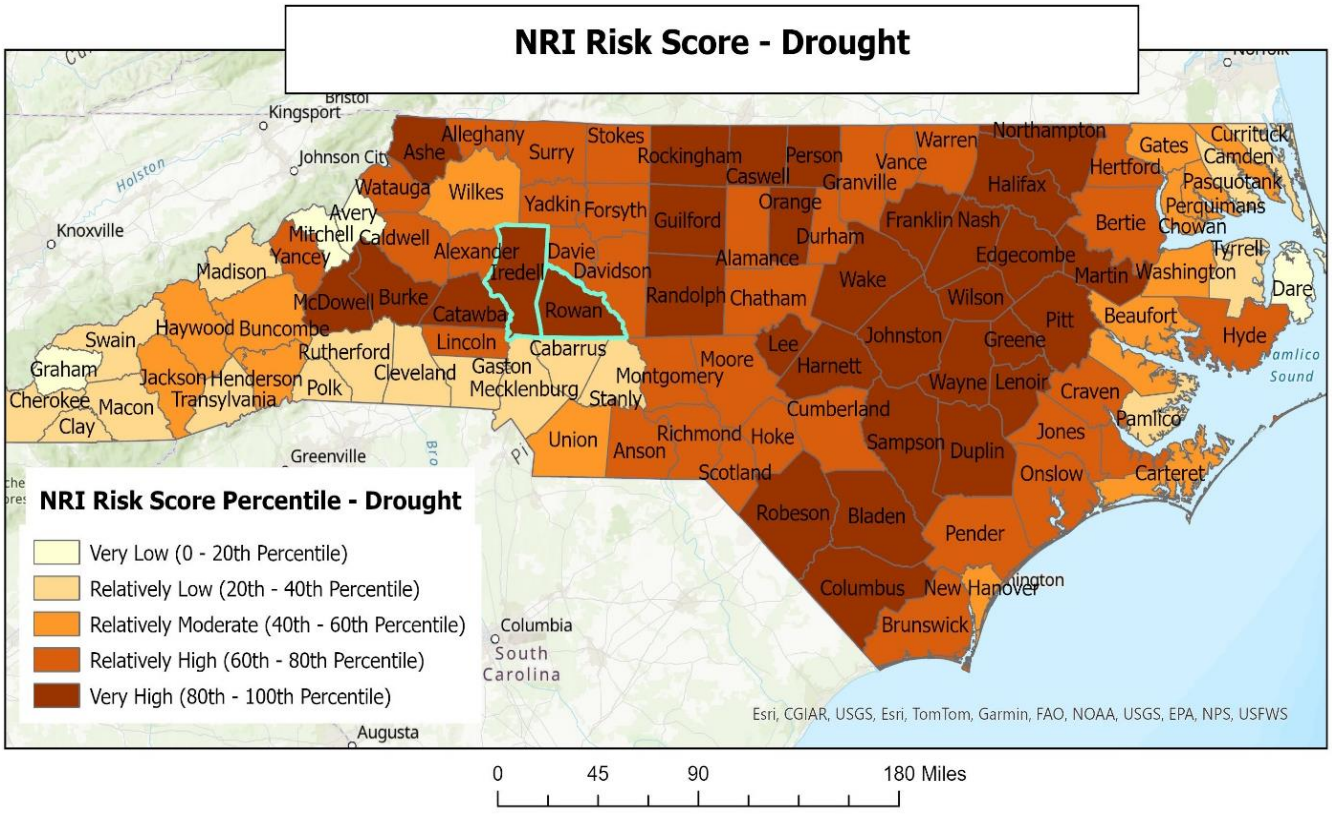


Figure 5- 13: NRI Risk Score Percentile for Drought when compared to other counties

5.5.6. Drought Hazard Vulnerability and Impact

Drought Hazard Vulnerability and Impact Agricultural crops are most directly affected and vulnerable to drought, and their loss can result in a significant economic burden on the local economy. The local economy is semi-dependent upon agriculture. Within the community, it is common knowledge that the past two decades of drought conditions have contributed to a reduction in the number of local farmers.

It is estimated that annualized losses to the drought hazard will decrease over time due to the continued trend of decreasing agricultural production within the Region (for all jurisdictions in the planning area), much of which has to do with decreases in the number of farms and land available for farming. While future agricultural losses may decrease, other sectors of the Region that are dependent on water supply will continue to experience future economic impacts during periods of severe to extreme drought conditions.

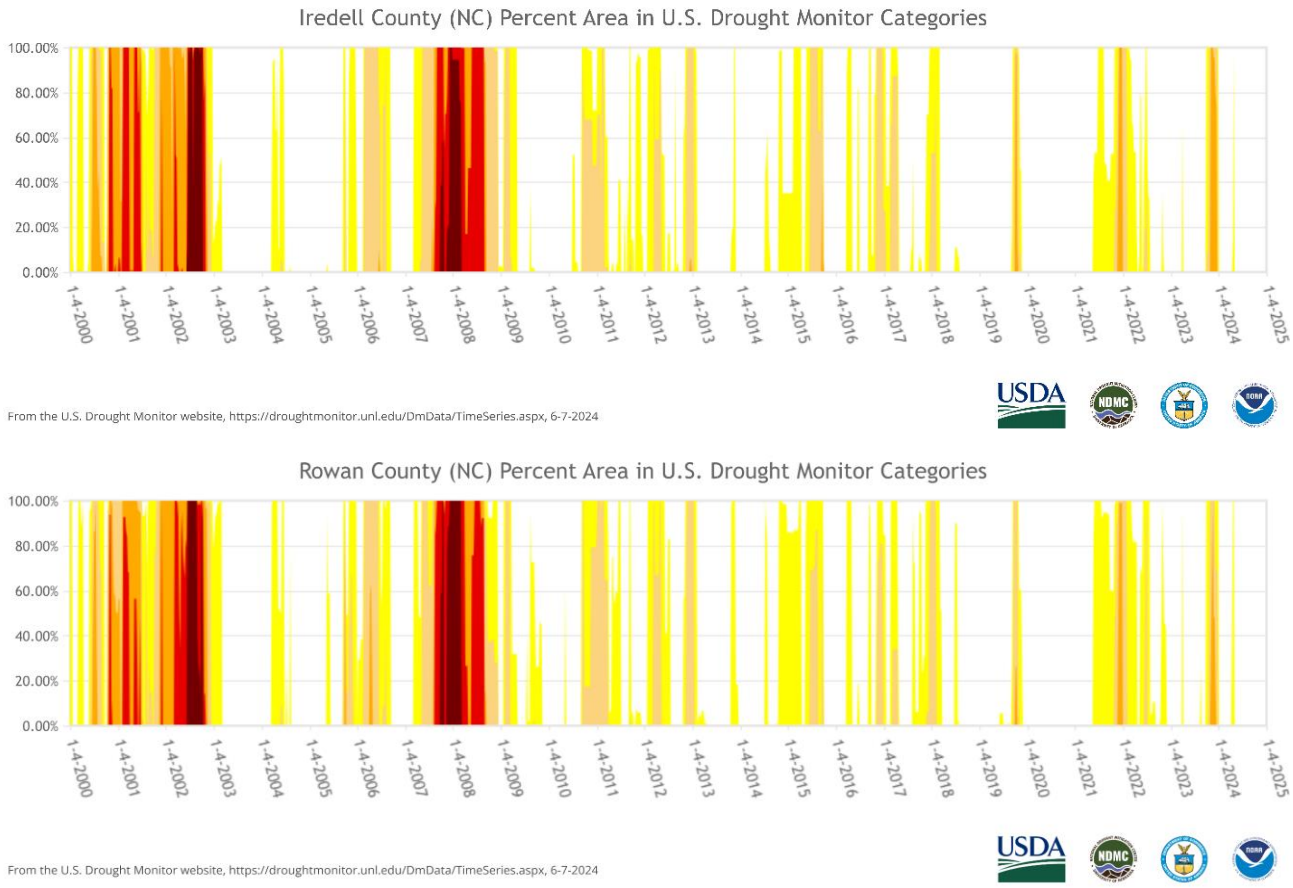


Figure 5- 14: US Drought Monitor Graphs from Rowan and Iredell Counties from 2000-2024

5.5.7. Future Vulnerability: Problem Statements

People

Drought can significantly affect communities that are reliant on a stable water supply for livelihoods, leading to decreased income and economic losses. Water shortages can also lead to a decrease in water quality, which can create serious risk for those who have existing health conditions or may create new health issues for those impacted. The Iredell Rowan planning area experienced a 7.58% and 4.88% population increase in each county between 2018 and 2023, respectively, and the planning area expects to continue to increase in population for the near future. Municipalities within Iredell County have seen significant increases in the population, and current water supplies may not be able to support the homes that are planned. To prevent negative impacts to residents in the planning area, the planning area should focus on improving communications if the water quality is decreased to inform residents of reduced water quality.

Changes in Development or Housing Characteristics

Iredell County has increased the number of housing units by 13.72% between 2018 and 2023 which reflects the projected population growth of 20% highlighted by the 2045 Horizon Plan[10] . Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. As a result of the increase in population and housing units, there may be a strain on the water supply as more residents move into the planning area. As a result, the planning area should consider implementing water conservation regulations that help prevent water shortages to prepare for an increase in water usage associated with the population increase.

Continuity of Operations

There are no major interruptions to continuity of operations expected with drought conditions.

Economy

Drought may economically impact those who are reliant on water supply for income, such as those who rely on agriculture. Drought can lead to water shortages, lower quality water supply, and increased cost of utilities, all of which may result in impacts to the local economy. In Iredell County 0.52% of employment and 0.04% of employment in Rowan County are attributable to agriculture. In the event of a drought, the NRI estimates that EAL is $285,000 in Iredell County and $748,000 in Rowan County due to drought. As a result, the planning area should consider taking measures to preserve water when drought conditions are expected to lessen the economic impact of drought. Increased prices of water could also impact the agricultural revenue and negatively impact the planning area.

Natural Environment

Drought can damage habitats, limit water availability, and limit food supply for plants and animals. Drought can also lead to plants and trees dying from lack of precipitation and becoming fuel for a wildfire event. Drought also increases potential risk of wildfire which creates other economic impacts, environmental impacts, and or impacts on property and infrastructure. Droughts that last an extended period can result in wildfires that are more intense than usual. According to the NRI, Iredell County is expected to experience 29 drought events per year and Rowan County is expected to experience 29.3 events per year.

To effectively address drought conditions, the planning area should prioritize water conservation practices and implement water use restrictions in the event of an imminent drought. Strategies for water conservation will not only preserve water supplies but can also protect the natural environment from drought impacts and mitigate risks associated with extended periods of drought.

First Responders

[10] Clarion Associates and Iredell County Planning & Development Department, “2045 Horizon Plan: Iredell County” (Iredell County: Iredell County, December 19, 2023), https://www.iredellcountync.gov/DocumentCenter/View/338/2045-Horizon-Plan-PDF.

The only projected impact on first responders due to drought conditions would be that in the event of a wildfire or fire, there would be reduced water supply to put out wildfires. The planning area should consider measures that help secure water supply during drought conditions to ensure that water is available to put out wildfires. As drought conditions continue to impact the planned area, the risk of wildfire may also increase significantly. By proactively implementing debris removal programs that clear excess debris and vegetation, the planned area will reduce the risk of wildfires and improve community safety.

Climate Change

Future changes in weather patterns and climate may have effects on the vulnerability to the drought hazard for all counties in North Carolina. These changes could impact the probability of drought occurrences and the extent or location of droughts. Lasting drought conditions may be experienced in some areas more frequently. The North Carolina Climate Science Report[11] predicts future droughts to be warmer than historical events with an elevated level of confidence. The warmer conditions will lead to more rapid drying through increases in potential evapotranspiration. Therefore, it is likely that future droughts in the planning area will be more frequent and severe in terms of soil moisture deficits and the impacts on rainfed agriculture and natural vegetation. To reduce future impacts, the planning area should consider water conservation practices that help prepare for projected increase in probability, extent, and severity of drought due to climate change.

Recommendations

The planning area should consider the following mitigation actions to help reduce risk of drought and drought impacts:

- **Communication Improvement:** Develop a way to distribute or notify residents about drought and drought prevention. This includes information about water conservation restrictions, reduced water quality, or impending drought conditions. This will help reduce negative health impacts by informing residents of lower water quality and help prepare the planning area for drought by conserving water in times of impending drought.
- **Water Conservation:** Implement measures to conserve water when drought conditions are imminent and prioritize adopting water conservation measures in the event of drought. This will minimize economic impacts due to drought and prepare for the projected increase in drought conditions due to climate change.
- **Debris Removal:** The planning area should consider implementing debris removal programs to prevent excessive risk of wildfires caused by prolonged periods of drought.

5.6. Extreme Heat

5.6.1. Hazard Description

Extreme heat, like drought, poses minor risk to property. However, extreme heat can have devastating effects on health. Extreme heat is often referred to as a “heat wave.” According to

[11] Kenneth E. Kunkel et al., “North Carolina Climate Science Report.”

the National Weather Service (NWS), there is no universal definition for a heat wave, but the standard U.S. definition is any event lasting at least three days where temperatures reach ninety degrees Fahrenheit or higher. However, it may also be defined as an event at least three days long where temperatures are ten degrees greater than the normal temperature for the affected area. Heat waves are typically accompanied by humidity but may also be very dry. There are around 1,500 deaths every year associated with extreme heat[12].

According to the National Oceanic and Atmospheric Administration (NOAA), heat is the number one weather- related killer among natural hazards, followed by frigid winter temperatures. The NWS devised the Heat Index as a mechanism to better inform the public of heat dangers. The Heat Index Chart, shown in Figure 5- 15, uses air temperature and humidity to determine the heat index or apparent temperature. Table 5- 12 shows the dangers associated with different heat index temperatures. Some populations, such as the elderly and young, are more susceptible to heat danger than other segments of the population.

Table 5- 12: Heat index and potential effects on the body[13]

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

In addition, NOAA has seventeen metropolitan areas participating in the Heat HealthWatch/Warning System to better inform and warn the public of heat dangers. A Heat HealthWatch is issued when conditions are favorable for an excessive heat event in the next 12 to 48 hours (about 4 days). A Heat Warning is issued when an excessive heat event is expected in the next 36 hours (about 3 days). Furthermore, a warning is issued when the conditions are occurring, imminent, or have a high likelihood of occurrence. Urban areas participate in the Heat Health Watch/Warning System because urban areas are at greater risk of heat effects. Stagnant atmospheric conditions trap pollutants, thus adding unhealthy air to excessively hot temperatures. In addition, the “urban heat island effect” can produce significantly higher nighttime temperatures because asphalt and concrete (which store heat longer) gradually release heat at night.

5.6.2. Location

[12] Climate change indicators: Heat-Related Deaths | US Environmental Protection Agency (EPA). (2024, August 16). US EPA. https://www.epa.gov/climate-indicators/climate-change-indicators-heat-related-deaths#:~:text=Some%20statistical%20approaches%20estimate%20that,set%20shown%20in%20Figure%201.
[13] NOAA’s National Weather Service. (n.d.-e). What is the heat index? https://www.weather.gov/ama/heatindex

Excessive heat typically impacts a large area and cannot be confined to any geographic or political boundaries. The entire Iredell Rowan Region and all its jurisdictions is susceptible to extreme heat conditions.

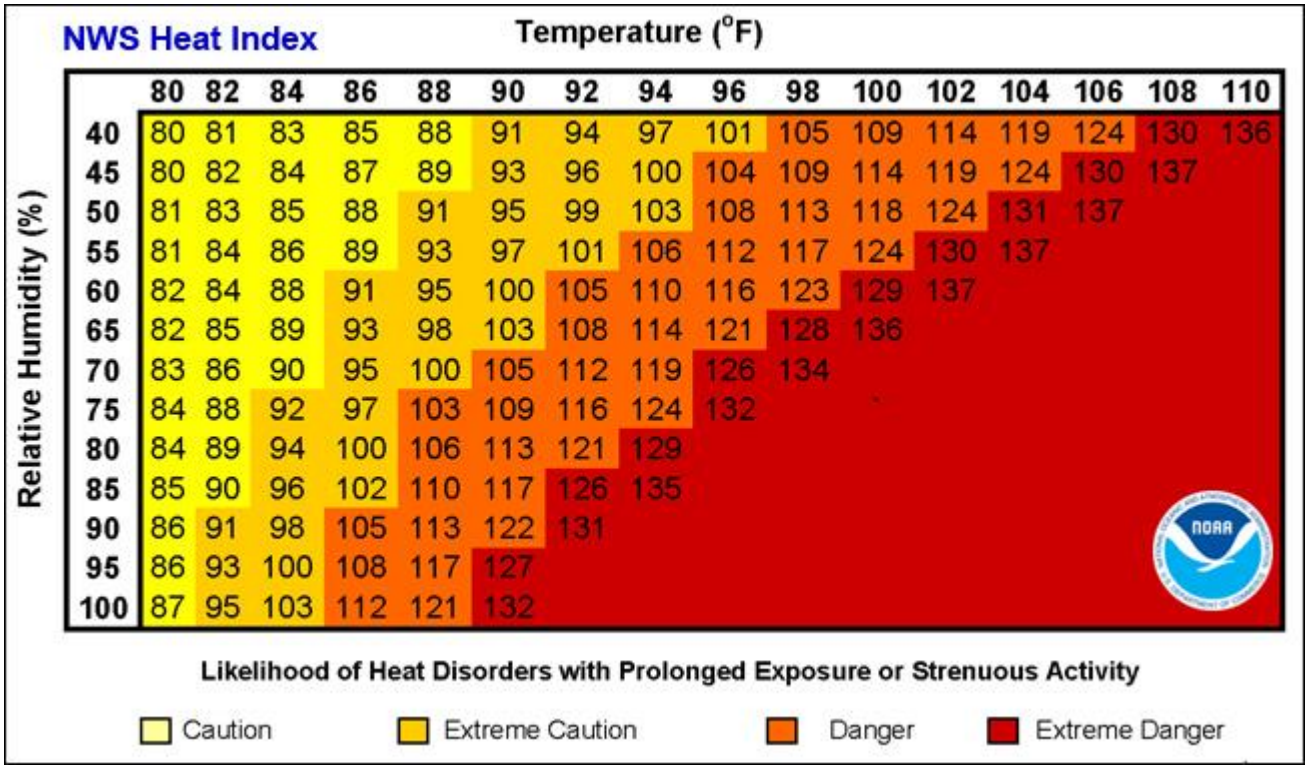


Figure 5- 15: National Weather Service Heat Index with Relative Humidity and Temperature. [14]

The extreme heat maps (Figure 5- 17, Figure 5- 16, Figure 5- 18) are from FEMAs NRI census tract dataset and was downloaded to symbolize the heat wave Total Expected Annual Loss. The data utilized is from 11/12/2005 to 10/06/2022, so the period of record for which Extreme Heat data are utilized is 16.9 years. This applies to the Figure 5- 16, Figure 5- 17, and Figure 5- 18.

[14] NOAA's National Weather Service. (n.d.-d). What is the heat index? https://www.weather.gov/ama/heatindex

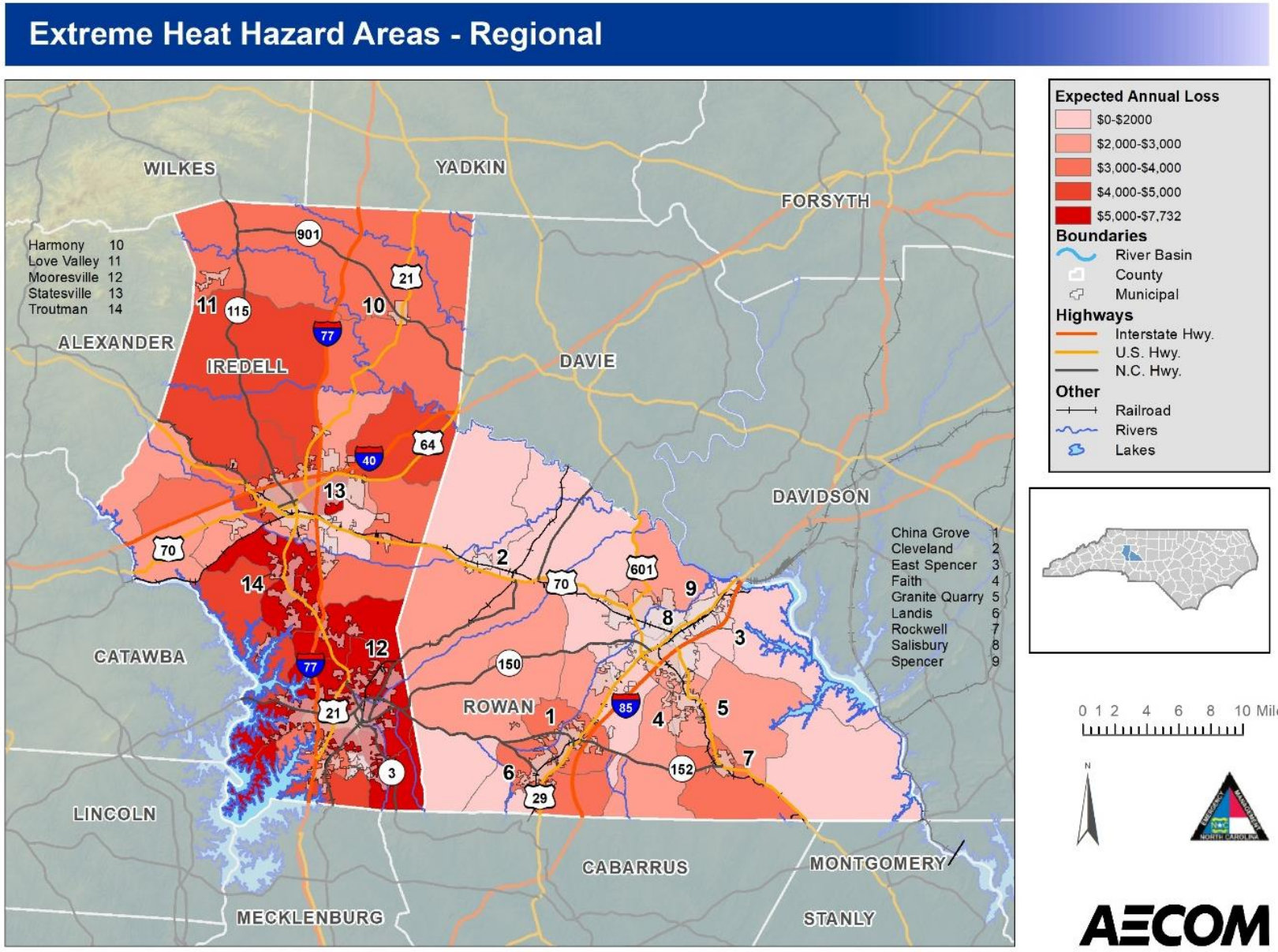


Figure 5- 16: Extreme Heat Hazard Areas in the Planning Area

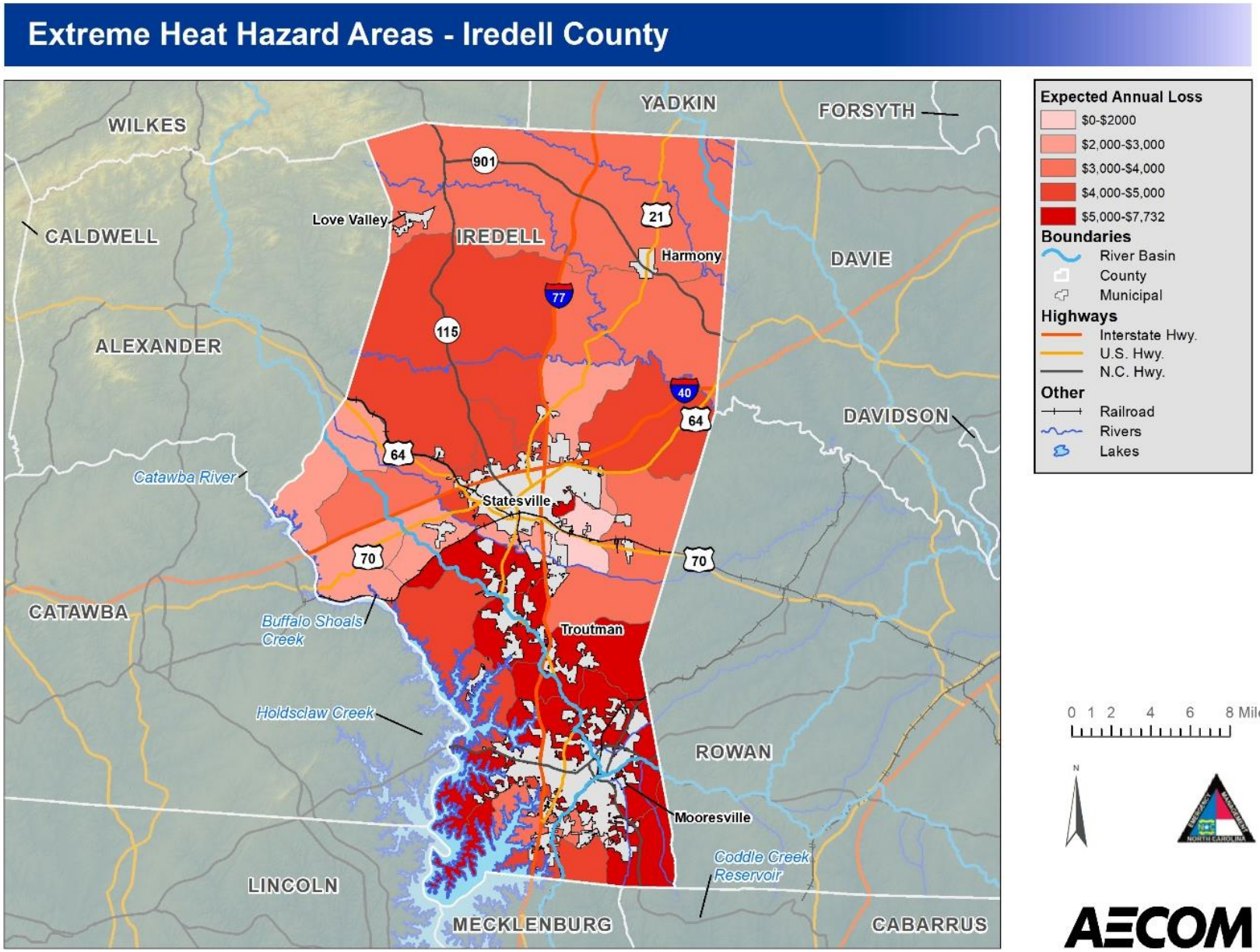
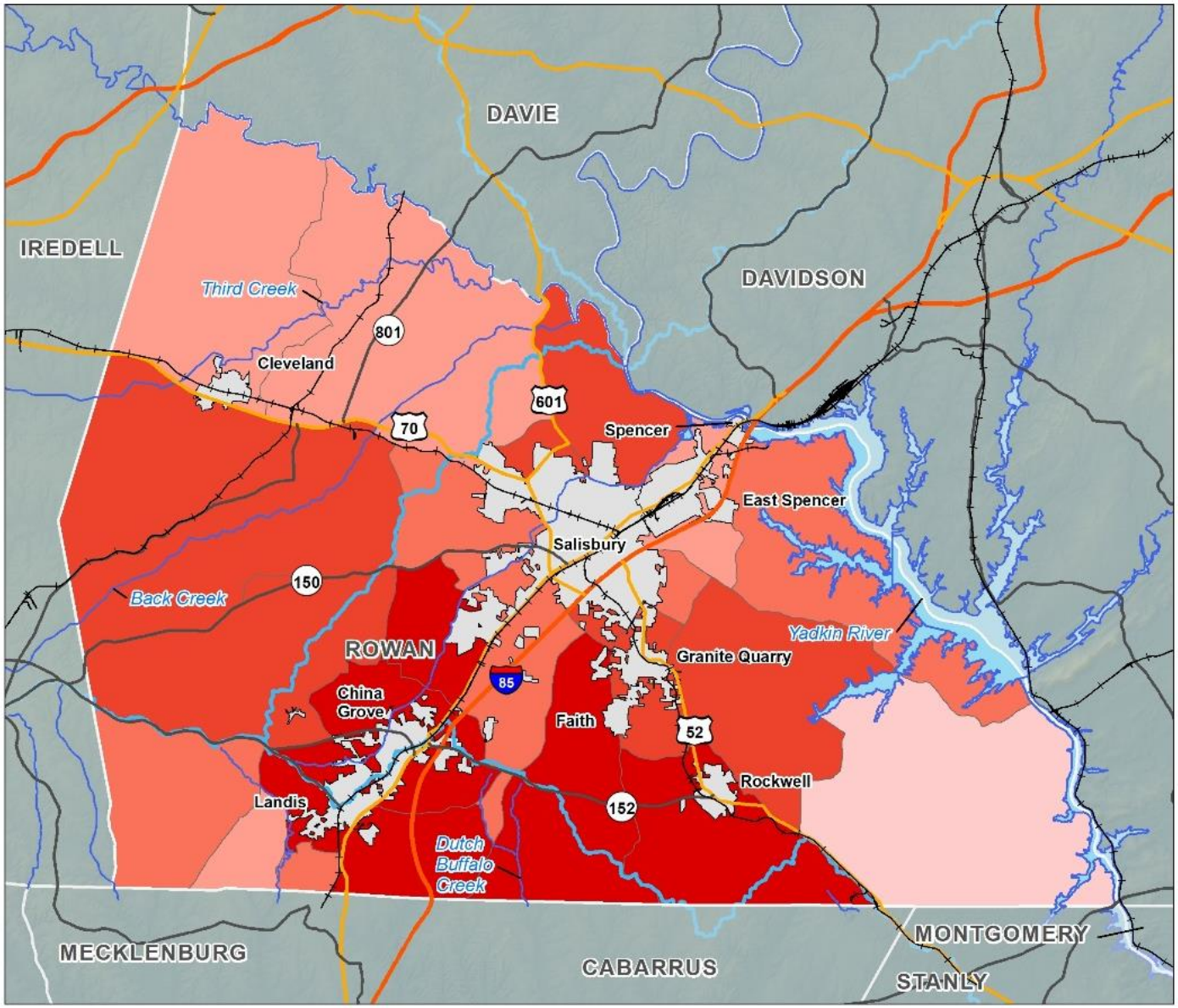


Figure 5- 17: Extreme Heat Hazard Areas in Iredell County

Extreme Heat Hazard Areas - Rowan County



Expected Annual Loss
- $0-$1,000
- $1,000-$1,500
- $1,500-$2,000
- $2,000-$2,750
- $2,750-$3,490

Boundaries
- River Basin
- County
- Municipal

Highways
- Interstate Hwy.
- U.S. Hwy.
- N.C. Hwy.

Other
- Railroad
- Rivers
- Lakes

0 1 2 4 6 Miles

N

AECOM

Figure 5- 18: Extreme Heat Hazard Areas in Rowan County

5.6.3. Extent

The extent of extreme heat can be defined by the maximum temperature reached. The highest temperature recorded in the Iredell Rowan Region is 106 degrees Fahrenheit (reported on August 18, 1988) in Iredell County.

- Iredell County: 106°F (August 18, 1988)
- Rowan County: 105° (June 19, 1944)

5.6.4. Historical Occurrences

Data from the NCDC was used to determine historical extreme heat and heat wave events in the Iredell Rowan Region. One of the most widespread heat waves in recorded history affected most of the United States during June and July 2012. This heat wave was responsible for at least 82 reported deaths while breaking thousands of elevated temperature records from Colorado all the way to the East Coast. The worst portion of this heat wave developed across the Carolinas June 29th through July 9th, with another surge of extreme heat July 22nd through the 29th. At the time, 2012 was the warmest year on record for the continental United States, running 3.2 degrees above the long-term average and breaking the prior warmest year's record set in 1998 by a full degree. (This record has since been broken again in 2016) March, June, and July of 2012 were exceptionally warm and offset otherwise normal temperatures recorded during the fall and early winter.

According to a NCDC database search from 1950-2023 for Iredell and Rowan counties, “A very hot and humid airmass that spent several days building west of the Appalachians finally made it east of the mountains, bringing very hot conditions to foothills and Piedmont of North Carolina. The high temperature at Charlotte-Douglas International Airport hit 104 degrees on both the 29th and 30th, tying the all-time high. The heat index hit 105 degrees. Excessive heat affected areas east of Charlotte. The Air Support Operations Squadron (ASOS) at Monroe, NC reported a heat index value of 110 degrees on the 30th. Lower dewpoints over the foothills resulted in sub-advisory and warning level heat index values. The heat lasted through July 1st, before thunderstorms brought cooler conditions.”

In addition, information from the State Climate Office of North Carolina was reviewed to obtain historical temperature records in the region. Temperature information has been reported since 1893. The recorded maximum for each county can be found below in Table 5- 13.

Table 5- 13 Highest and Lowest Recorded Temperatures in Iredell and Rowan County[15]

County	Date	High Temperature	Date	Low Temperature
Iredell	August 18, 1988	106**°F**	January 31, 1966	-8**°F**
Rowan	June 19, 1944	105**°F**	January 28, 1940	-11**°F**

[15] North Carolina State Climate Office. (2024). Weather Extremes [Dataset]. In NC Products: North Carolina State Climate Office. https://products.climate.ncsu.edu/extremes/

Table 5- 14 Maximum temperature by month in Iredell and Rowan Counties[16]

Month	County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Max Temperature °F	Iredell	81	83	93	95	99	105	105	106	104	96	85	80
	Rowan	82	82	93	95	102	105	105	105	103	100	89	79

The State Climate Office also reports average maximum temperatures in various locations in the region. The most centralized location is in Salisbury (Rowan County). Table 5- 14 shows the maximum temperature by month in Iredell and Rowan and Table 5- 13 shows the maximum temperatures recorded and lowest temperatures recorded in Iredell County and Rowan County.

5.6.5. Probability of Future Occurrences

The NRI calculates extreme heat based on data from 2005 to 2021 and instead of describing events as extreme heat, the NRI uses the phrase Heat Wave. The NRI reports that the planning area has a 0.1% chance of experiencing an extreme heat event, or heat wave, every year and has a relatively low EAL Rating. For more information about NRI census tract level risk and expected impacts, see Appendix K.

Table 5- 15: NRI Extreme Heat (Also referred to as Heat Wave by the NRI) risk values

NRI		Iredell	Rowan
EAL	Rating	Relatively Low	Relatively Low
	Value	$192,000	$63,000
	Frequency	0.1	0.1
Risk Index	Rating	Relatively Low	Relatively Low
	Score	65.0	49.5

[16] North Carolina State Climate Office. (2024). Weather Extremes [Dataset]. In NC Products: North Carolina State Climate Office. https://products.climate.ncsu.edu/extremes/

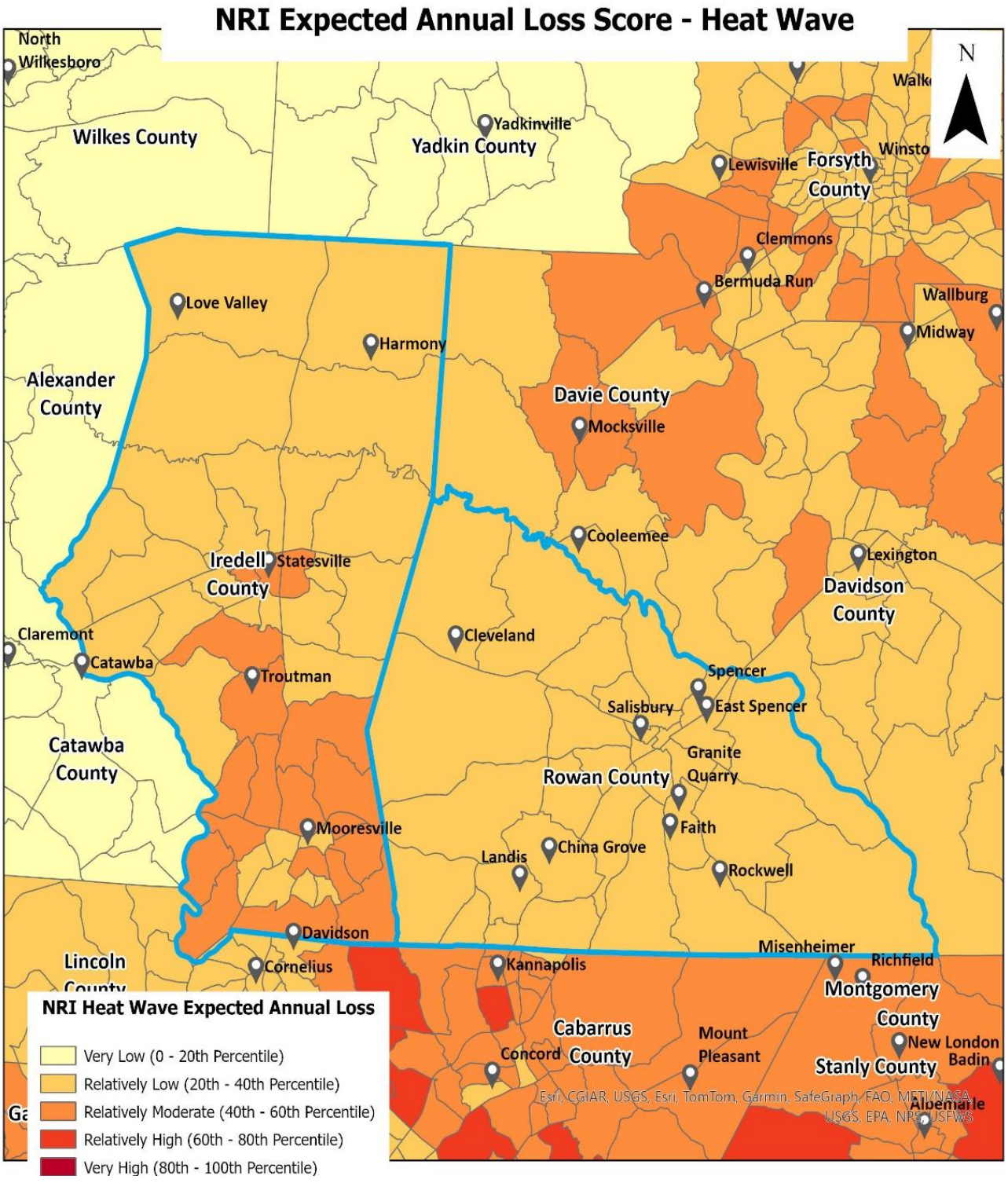


Figure 5- 19: NRI EAL Score for Heat Waves in the planning area. The NRI uses the term heat wave, but this is referring to the same hazard as extreme heat refers to.

Table 5- 16: NRI extreme heat jurisdictional summary based on census tracts in the jurisdictions.

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$25,191.05	35.69	Relatively Low	35.18	Relatively Low	0.0619
Harmony	$9,325.89	43.77	Relatively Moderate	35.19	Relatively Low	0.0619
Love Valley	$1,534.26	24.50	Relatively Low	35.12	Relatively Low	0.0619
Mooresville	$39,917.34	31.40	Relatively Low	24.42	Relatively Low	0.0619
Statesville	$69,066.09	34.92	Relatively Low	31.09	Relatively Low	0.0619
Troutman	$8,699.82	30.47	Relatively Low	24.46	Relatively Low	0.0619
Rowan County *(Unincorporated Area)*	$2,732.36	28.65	Relatively Low	24.64	Relatively Low	0.0619
China Grove	$16,404.96	42.01	Relatively Moderate	35.24	Relatively Low	0.0619
Cleveland	$62,465.04	55.90	Relatively Moderate	59.91	Relatively Moderate	0.00066
East Spencer	$9,885.69	34.19	Relatively Low	35.33	Relatively Low	0.0619
Faith	$13,730.33	40.56	Relatively Moderate	35.18	Relatively Low	0.0619
Granite Quarry	$16,896.83	39.35	Relatively Low	35.18	Relatively Low	0.0619
Landis	$15,258.99	41.17	Relatively Moderate	35.16	Relatively Low	0.0619
Rockwell	$2,973.45	34.56	Relatively Low	35.44	Relatively Low	0.0619
Salisbury	$62,211.33	38.66	Relatively Low	35.20	Relatively Low	0.0619
Spencer	$24,072.43	38.09	Relatively Low	35.25	Relatively Low	0.0619

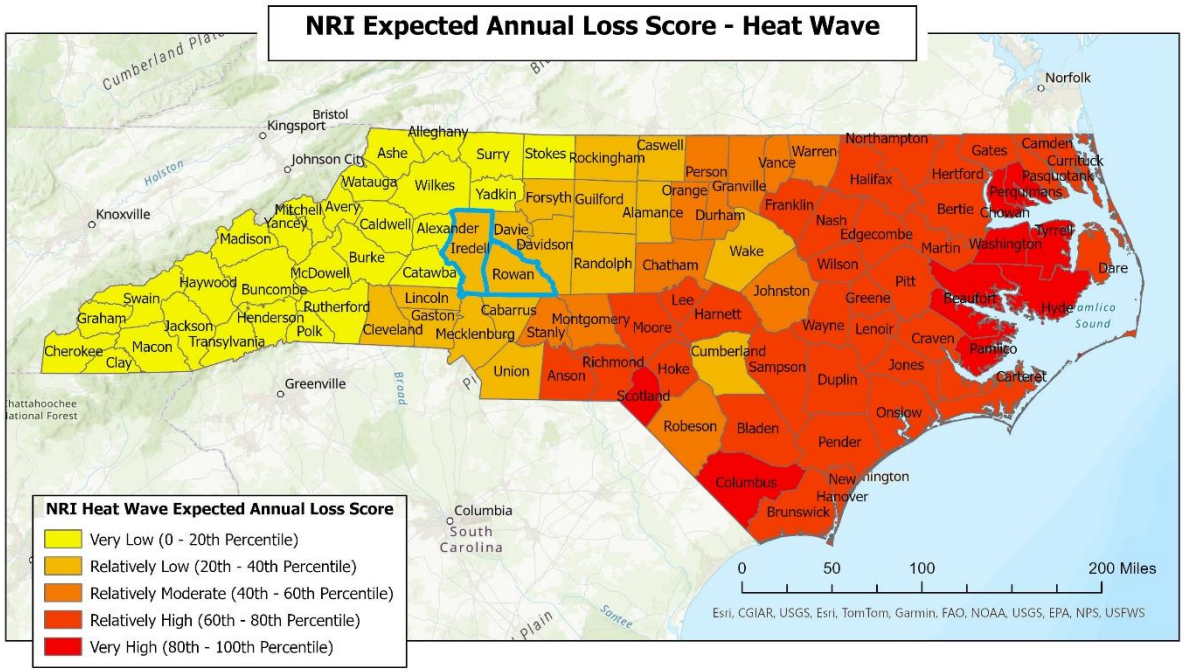


Figure 5- 20: NRI EAL Score for Heat Waves in NC

5.6.6. Extreme Heat Hazard Vulnerability and Impact

It is estimated that annualized losses to the extreme heat hazard will decrease over time due to the continued trend of decreasing agricultural production within the Region and all its jurisdictions by potentially damaging sensitive crops, much of which has to do with decreases in the number of farms and land available for farming. In addition to the physical danger, periods of extreme heat put pressure on the Region's infrastructure. Heat waves cause people to increase their usage of air conditioning, which can strain the power grid and trigger power outages; power outages in turn, can lead to adverse health impacts.

5.6.7. Future Vulnerability: Problem Statements

People

Extreme heat can cause heat stroke, dehydration, sunburn, and heat exhaustion[17]. Extreme heat often results in the highest number of natural hazard related deaths in the U.S. annually[18], and those at an increased risk of experiencing severe injury or death due to extreme heat are children, the elderly, and the disabled[19]. Special considerations should be made for those who may have limited mobility such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the substantial portion of residents who may need extra assistance or support in the event of extreme heat, it is important that each jurisdiction in the planning area considers specific measures to mitigate impacts to the community. This includes informing residents on how to prevent extreme heat related injuries, preparing cooling shelters, or distributing cooling appliances such as fans or air conditioners.

In Iredell and Rowan County 3.2% and 6.5% of residents, respectively, do not have access to a vehicle in their household. This can create a significant challenge in the event of an extreme heat event where households may not be able to travel to a cooling center. The increase in accessible public transport may help residents reach cooling centers in an extreme heat event where vehicles would otherwise not be available to the household. Additionally, the planning area can encourage households to consider their cooling options and prepare a plan to travel to cooling centers if required.

Changes in Housing and Development Characteristics

Iredell County has increased the number of housing units by 13.72% between 2018 and 2023 which reflects the projected population growth of 20%. Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. Along with the increased population and increased demand for electricity, cities can

[17] "Extreme Heat," FEMA Preparedness Community, n.d., https://community.fema.gov/ProtectiveActions/s/article/Extreme-Heat.
[18] "Extreme Heat | Impact," FEMA Preparedness Community, n.d., https://community.fema.gov/ProtectiveActions/s/article/Extreme-Heat-Impact.
[19] "Extreme Heat."

be up to 10 degrees warmer due to the concrete and asphalt in cities that absorb more heat than rural areas[20]. As a result of the increase in population and housing units, the planning area should consider evaluating power generation capacity to support larger population electricity demand in periods of extreme heat. The planning area should also consider preserving the natural environments in the planning area which provide cooling effects through evaporation and providing shade to mitigate the increased heat associated with increased development.

Economy

Increased demand for electricity for cooling appliances and systems can increase the cost of electricity while putting stress on the electrical grid. This can negatively impact the planning area by increasing electricity cost for residents, businesses, and facilities.

Continuity of Operations

Stress on the power supply may occur during periods of extreme heat causing power outages. If power outages occur, there could be a reduced ability for businesses, residents, and facilities that rely on electricity to operate as normal. As a result, the planning area should consider the resiliency of their power grids and evaluate the potential actions that can be taken to reduce power outages related to extreme heat.

Natural Environment

Periods of extreme heat can impact the natural environment by damaging or killing crops and increasing the risk of wildfire.

First Responders

There may be an increase in heat-related injuries in extreme heat events, so the planning area should consider strengthening communication and cool sheltering locations. Because of the sizable portion of residents in the planning area that are especially vulnerable to extreme heat related injuries, the planning area should prepare for an increase in population and consider expanding capabilities to address the increase of vulnerability by expanding emergency response capabilities.

Climate Change

According to the NC Climate Science Report (NCCSR), climate models suggest that warming trends will continue, and North Carolina should expect an annual average temperature increase between 2°-4°F and 2°-5°F[21]. The number of very hot days, maximum temperature of 95°F or higher, across the Piedmont Plain is also expected to increase by 10 to 20 days (about 3 weeks) per year compared to the 1996-2015 average. According to the NCCSR, it is very likely that the number of warm (70°F or higher) and very warm nights (75°F or higher) will also increase. As a result, the planning area should consider preparing for increased extreme heat events by

[20] Federal Emergency Management Administration, “Extreme Heat | Local Risks and Plans,” FEMA Preparedness Community, n.d., https://community.fema.gov/ProtectiveActions/s/article/Extreme-Heat-Local-Risks-and-Plans.
[21] Kenneth E. Kunkel et al., “North Carolina Climate Science Report.”

educating the public, preparing increased cooling shelters, and developing heat action plans to address extreme heat events that facilitate coordination between health services, emergency services, and law enforcement.

Recommendations

To better prepare the planning area for future vulnerabilities related to extreme heat, the following mitigation measures should be considered:

- **Public Education:** Develop public education campaigns to encourage residents to prevent extreme heat risks and develop strategies for extreme heat event preparations.
- **Cooling Shelters:** Evaluate the need for expanding the number of cooling shelters based on the need of residents including vulnerable populations and ensure that all residents can access shelters if needed. This includes ensuring that households without vehicles have a plan to travel to cooling shelters or take public transportation to cooling shelters if needed.
- **Heat Action Protocol:** Ensure that comprehensive plans are established to facilitate coordination with emergency responders, law enforcement, and health services in the event of extreme heat to enhance response capabilities in the event of heat related injuries or emergencies.
- **Emergency Response Expansion: I**ncrease emergency response capabilities to address the needs of a growing population and vulnerable communities in extreme heat.
- **Power Grid Resilience:** Ensure that power grids can support a population increase in times of higher electricity demand during heat waves to decrease heat related injuries.
- **Encourage Households to Establish Cooling Plans:** Encourage households to evaluate their emergency plan if they do not have an air conditioning unit or evaluate a plan for cooling to prevent heat related illnesses in the event of power failure.

5.7. Hail

5.7.1. Hazard Description

Hailstorms are a potentially damaging outgrowth of severe thunderstorms (thunderstorms are discussed separately in Section 5.9). Early in the developmental stages of a Hail event, ice crystals form within a low-pressure front due to the rapid rising of warm air into the upper atmosphere and the subsequent cooling of the air mass. Frozen droplets gradually accumulate on the ice crystals until they develop to a high enough weight and fall as precipitation. Hail typically takes the form of spheres or irregularly shaped masses greater than 0.75 inches in diameter. The size of hailstones is a direct function of the size and severity of the storm. High velocity updraft winds are required to keep hail in suspension in thunderclouds. The strength of the updraft is a function of the intensity of heating at the Earth's surface. Higher temperature gradients relative to elevation above the surface result in increased suspension time and hailstone size.

5.7.2. Location

It is important to note that Hail frequently accompany thunderstorms. Thunderstorms are widespread atmospheric disturbances not isolated from a specific geographic location. Therefore, it is assumed that the entire Region and all the jurisdictions in the planning area is exposed to these hazards. However, it is possible to map historic hail, as seen in figures below, reporting by diameter as an indication of where in the plan area these hazards have previously been observed and to what degree.

National Hail Data was downloaded from NOAAs NCEI and is represented in Figure 5- 22, Figure 5- 21, and Figure 5- 23. The point shapefile is symbolized using graduated symbols based on the largest diameter hail reported during the event. The data collection is from (1955-2022).

Hail Hazard Areas - Regional

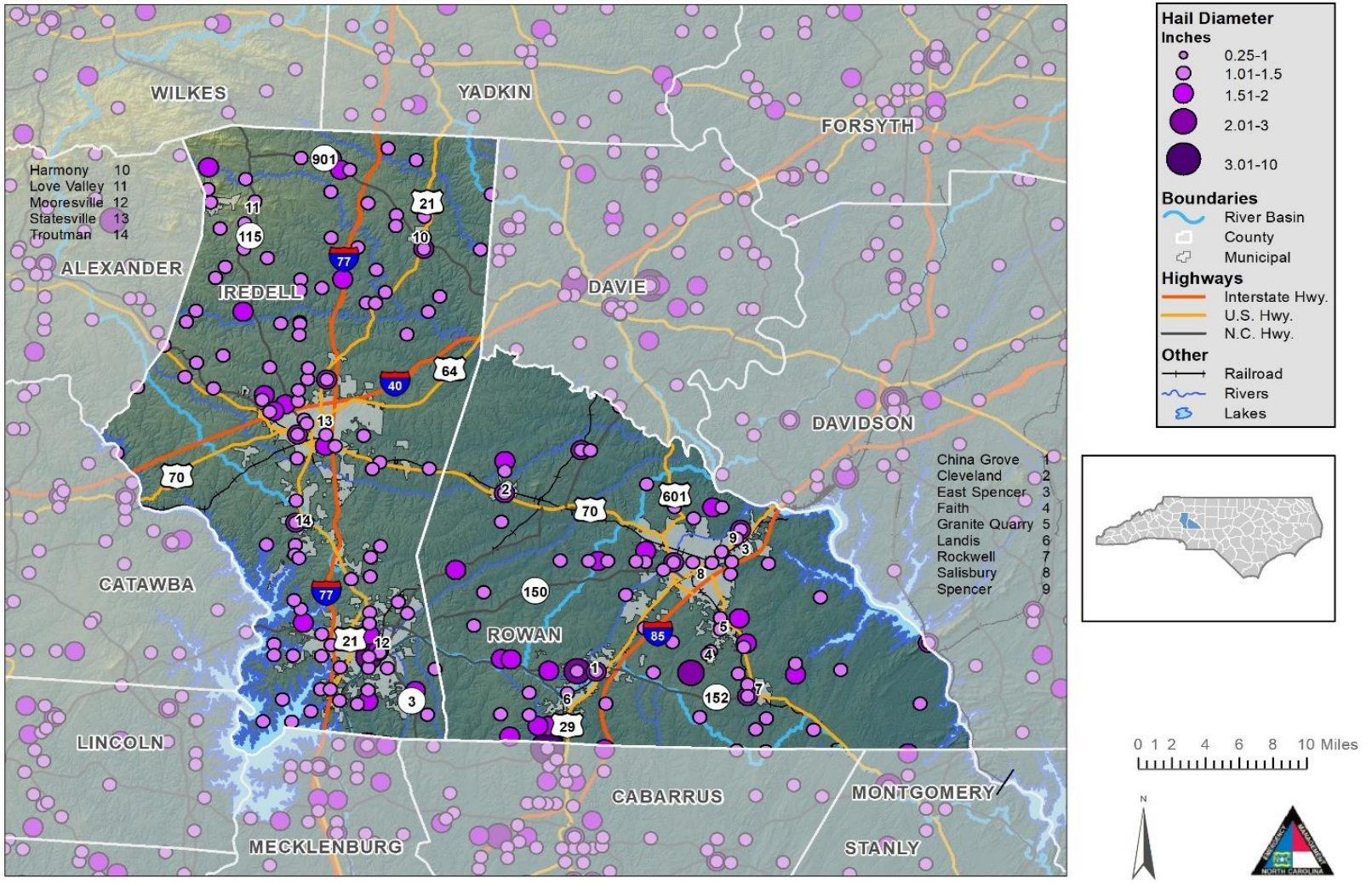


Figure 5- 21: Hail hazard areas in the planning area

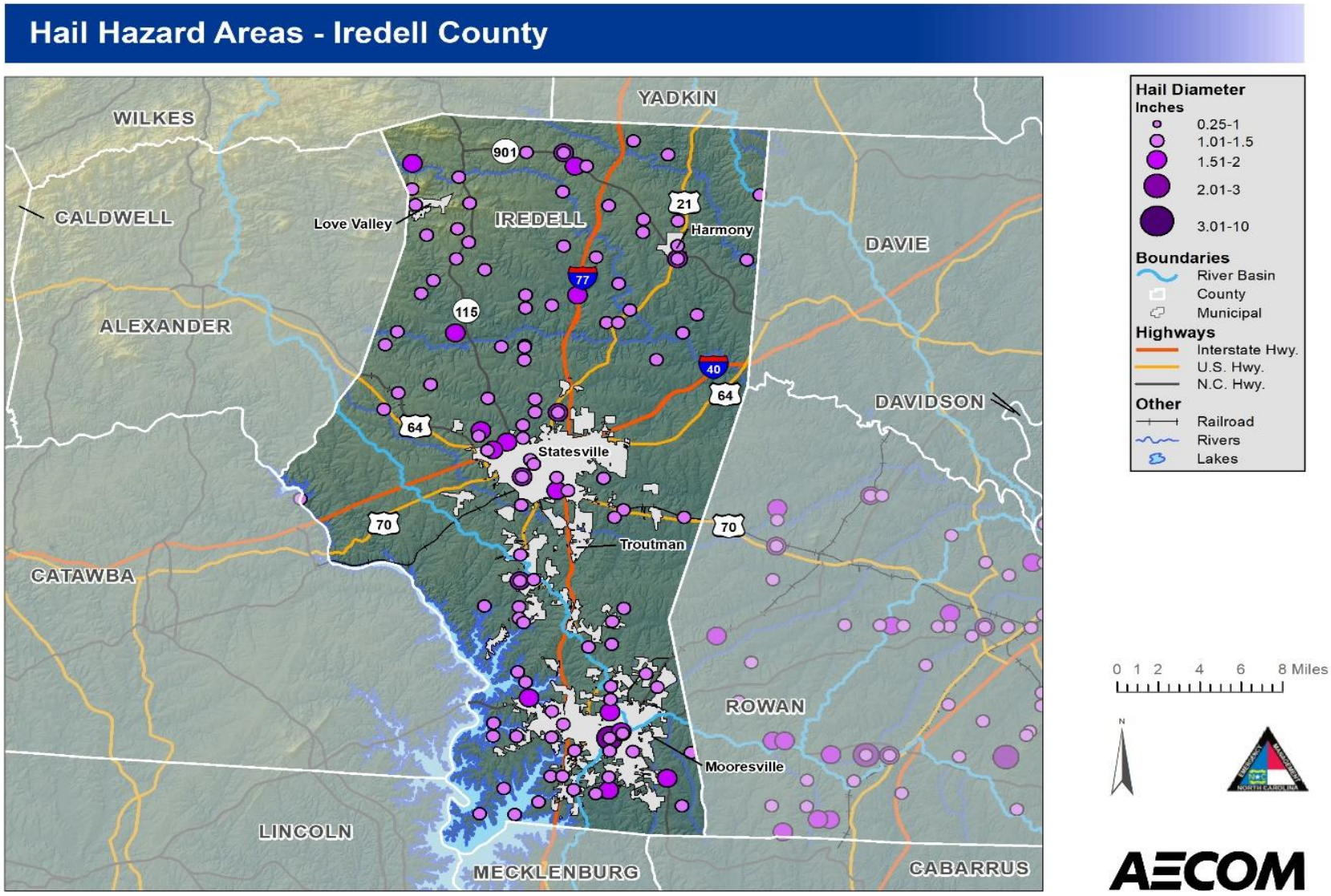


Figure 5- 22: Hail hazard areas in Iredell County

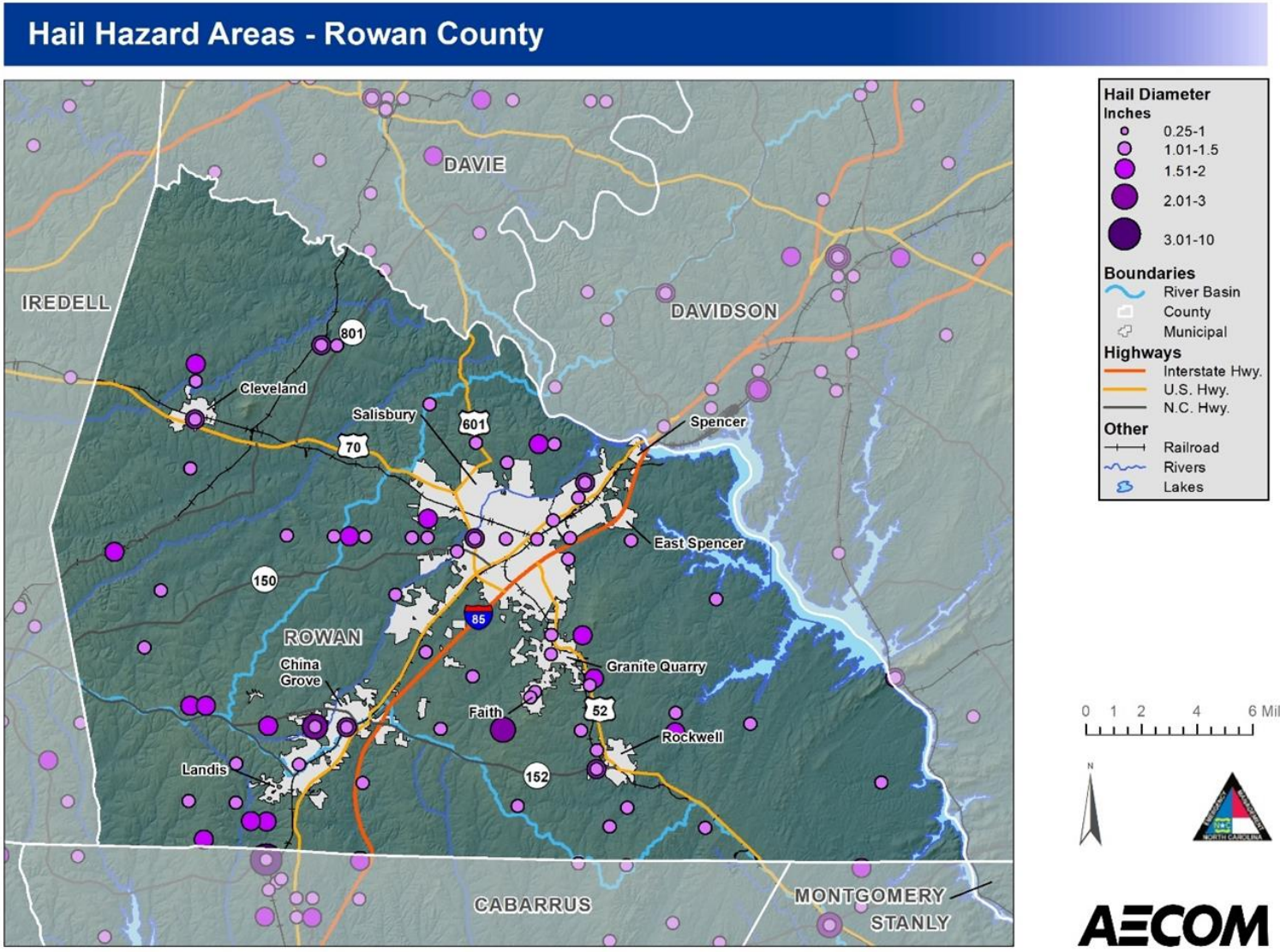


Figure 5- 23 Hail Hazard Areas in Rowan County

5.7.3. Extent

Definition:

The Tornado and Storm Research Organization (TORRO) Hail Intensity Scale (H0 to H10) in relation to typical damage and hail size codes:

Table 5- 17: TORRO Hail Intensity Scale

TORRO Hail Intensity Scale				
	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m2	Typical Damage Impacts
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-15	>20	Slight general damage to plants, crops
H2	Significant	10-20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60		Bodywork of grounded aircraft dented; brick walls pitted
H7	Destructive	50-75		Severe roof damage, risk of serious injuries
H8	Destructive	60-90		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hail	75-100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hail	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Table 5- 18: Hail Size and Diameter Description

Hail size and diameter in relation to TORRO Hail Intensity Scale.		
Size code	Maximum Diameter mm	Description
0	5-9	Pea
1	10-15	Mothball
2	16-20	Marble, grape

Hail size and diameter in relation to TORRO Hail Intensity Scale.		
Size code	Maximum Diameter mm	Description
3	21-30	Walnut
4	31-40	Pigeon's egg > squash ball
5	41-50	Golf ball > Pullet's egg
6	51-60	Hen's egg
7	61-75	Tennis ball > cricket ball
8	76-90	Large orange > Soft ball
9	91-100	Grapefruit
10	>100	Melon

The Size code is the maximum reported size code accepted as consistent with other reports and evidence.

5.7.4. Historical Occurrences

The following historical occurrences have been identified based on the NCDC Storm Events database Table 5- 19 from 2017 to May 2024. It should be noted that only those historical occurrences listed in the NCDC database are shown here and that other, unrecorded, or unreported events may have occurred within the planning area during this timeframe.

*Table 5- 19: All recorded hail events from the NCDC storm database in Iredell and Rowan County from March 2017 to January 2024[22]. * indicates a weather event area that is within the planning area that is not considered a town or a city.*

Location	County	Date	Magnitude (in)	NCDC Storm Database Event Narrative
Loray	Iredell	3/1/2017	1.75	Scattered numerous thunderstorms developed ahead of a cold front during the afternoon and evening within an unseasonably warm and humid air mass. Several severe thunderstorms developed across the foothills and Piedmont, producing locally damaging winds and hail up to the size of golf balls.
Rockwell*	Rowan	3/21/2017	1	Scattered evening thunderstorms developed in association with a surface trough and an unseasonably warm and moist air mass across western North Carolina. Although some wind damage was reported across the mountains in association with weakening storms moving into the area from East Tennessee, the bulk if activity was across the southern Piedmont, where multiple supercell thunderstorms produced large hail, with stones up to
Rowan County Airport*			1	

[22] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

Location	County	Date	Magnitude (in)	NCDC Storm Database Event Narrative
				the size of baseballs causing damage to vehicles and structures in the Harrisburg area.
China Grove	Rowan	6/13/2017	0.88	Scattered numerous thunderstorms developed during the afternoon and evening across western North Carolina. Multiple storms reached severe levels for brief periods, producing mainly localized wind damage. However, isolated hail to the size of quarters was also reported.
Charles*	Iredell	5/11/2018	0.75	Isolated convection developed during the afternoon and evening across the North Carolina foothills and moved southeast. One storm produced hail across Iredell County.
Rowan County Airport*	Rowan	6/2/2018	1	Isolated thunderstorms developed over the foothills of North Carolina during the afternoon and moved east and southeast into Piedmont. One of the storms produced brief damaging wind gusts and large hail.
Oswalt*	Iredell	6/14/2018	1	Scattered thunderstorms developed along the I-40 corridor in North Carolina during the evening and moved south across Piedmont. A couple of storms produced brief damaging winds.
Statesville	Iredell	7/22/2018	0.75	Scattered numerous thunderstorms developed along a cold front across the North Carolina Piedmont during the afternoon and evening. A few of the storms produced brief large hail and damaging winds. While most of the severe weather was marginal, a significant downburst did occur in the Concord area.
Mt. Mourne*	Iredell	8/8/2018	1.25	Scattered thunderstorms developed across the North Carolina Blue Ridge during the afternoon, with storms developing gradually along outflows into the Piedmont throughout the afternoon and into the evening. A few of the storms produced brief damaging winds.
Mooresville*			0.75	
Kannapolis*	Rowan	5/31/2019	1.75	Scattered thunderstorms, including a couple of supercell thunderstorms developed along a cold front across western North Carolina during the afternoon. A couple of storms produced severe weather, mainly in the form of damaging winds.
Mooresville Airport *	Iredell	6/20/2020	1	Scattered thunderstorms developed over western North Carolina during the afternoon. A couple of storms produced brief damaging winds and/or large hail.
Mazeppa*	Iredell	5/10/2021	0.75	Isolated thunderstorms developed across North Carolina Piedmont during the evening. At least one of the storms produced hail in Iredell County.
Craven*	Rowan	5/29/2021	1	Scattered thunderstorms developed over North Carolina Piedmont in the afternoon near a frontal zone. One of these storms produced damaging wind gusts and large hail as it passed over Salisbury.
Granite Quarry			0.75	
Salisbury			0.75	
South Salisbury *			1.5	

Location	County	Date	Magnitude (in)	NCDC Storm Database Event Narrative
Mazeppa*	Iredell	5/4/2022	0.75	Isolated strong to severe thunderstorms developed during the afternoon over western North Carolina ahead of a cold front. Several of the storms produced hail up to quarter size and isolated wind damage.
Shepherds*			1	
China Grove	Rowan	5/21/2022	1.25	Scattered thunderstorms and storm clusters developed over western North Carolina during the afternoon and evening. A few of the storms produced large hail and brief damaging wind gusts.
Love Valley	Iredell	6/17/2022	1	Scattered thunderstorms developed over western North Carolina during the afternoon. Several storms produced brief severe weather in the form of damaging wind gusts.
Houstonville*	Iredell	6/26/2023	1	Scattered thunderstorms moved across Piedmont during the late afternoon and evening. Several of these storms became severe, producing hail up to 2-inch diameter along with localized damaging wind gusts.
Mooresville JCT*			1	
New Hope*			2	
Salisbury	Rowan		1	
Woodleaf*			1.75	
Salisbury	Rowan	8/24/2023	1	Scattered thunderstorms and storm clusters developed across western North Carolina throughout the afternoon and evening. A few of the storms produced brief damaging wind gusts.

5.7.5. Probability of Future Occurrences

The NRI uses hail data from 1986 to 2021 to develop expected impacts and risk estimates. According to the NRI, Iredell County is expected to experience 5.5 events per year with $437,000 of damages and Rowan County is expected to experience 5.1 events per year with $332,000 of associated damages. For more information about census tract level risk and expected impacts, see Appendix K.

Table 5- 20: NRI hail risk values for Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Moderate	Relatively Low
	Value	$437,000	$332,000
	Frequency	5.5 Events Per Year	5.1
Risk Index	Rating	Relatively Low	Relatively Low
	Score	79.3	78.0

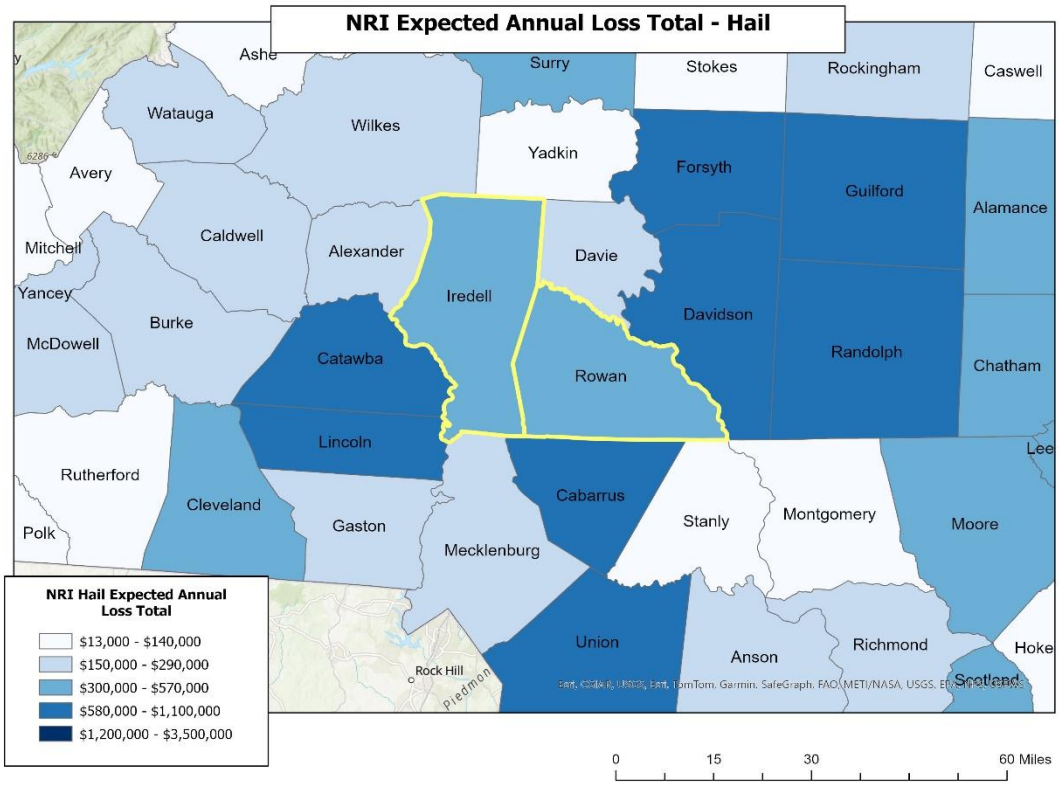


Figure 5- 24: NRI EAL total for Hail

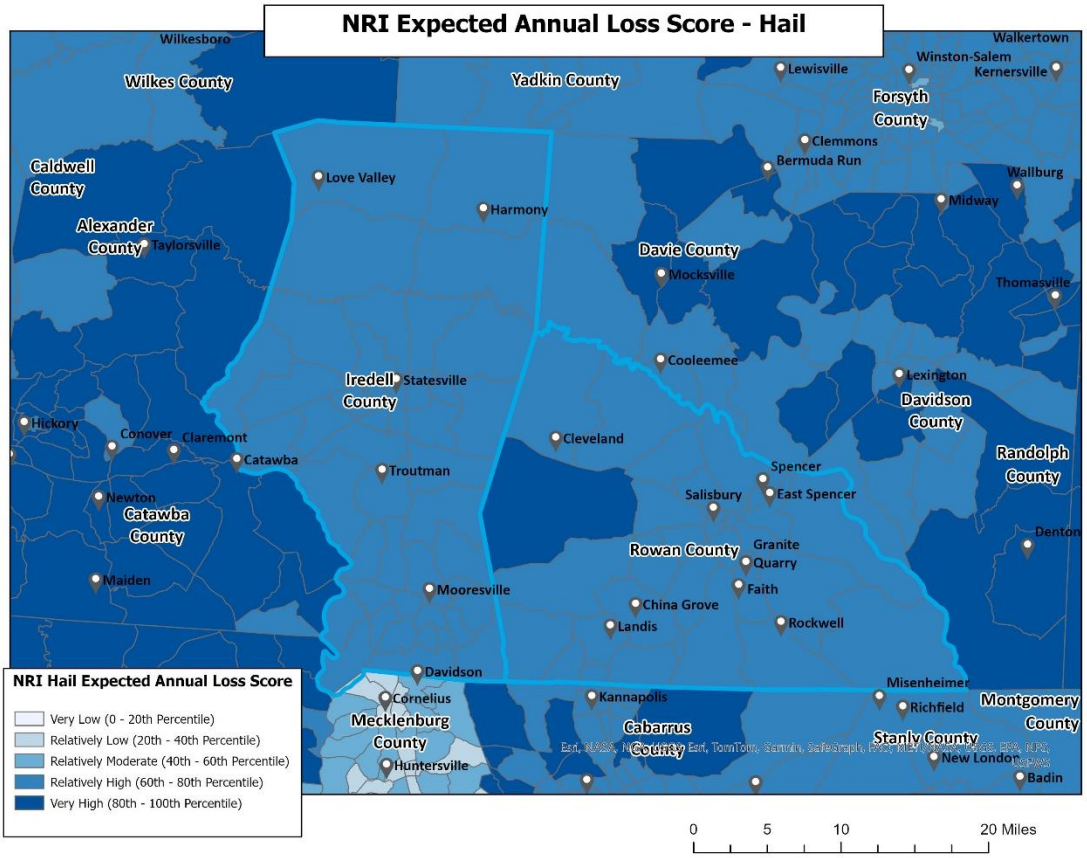


Figure 5- 25: NRI EAL Score for Hail

Table 5- 21: NRI hail data based on census tracts within each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$55,970.99	69.75	Relatively High	95.05	Very High	5.49
Harmony	$18,679.21	74.98	Relatively High	96.19	Very High	5.48
Love Valley	$3,142.66	56.92	Relatively Moderate	96.13	Very High	5.48
Mooresville	$11,498.31	76.21	Relatively High	90.71	Very High	5.08
Statesville	$179,974.64	72.08	Relatively High	93.52	Very High	5.27
Troutman	$43,823.78	74.90	Relatively High	90.38	Very High	4.93
Rowan County *(Unincorporated Area)*	$13,341.98	72.64	Relatively High	90.02	Very High	5.03
China Grove	$34,469.09	74.17	Relatively High	95.47	Very High	5.48
Cleveland	$19,222.21	70.60	Relatively High	94.86	Very High	5.48
East Spencer	$20,995.48	67.78	Relatively High	95.05	Very High	5.51
Faith	$36,232.22	75.93	Relatively High	93.58	Very High	5.53
Granite Quarry	$44,475.21	74.92	Relatively High	93.59	Very High	5.53
Landis	$32,134.14	73.54	Relatively High	95.49	Very High	5.48
Rockwell	$7,223.55	70.16	Relatively High	93.81	Very High	5.53
Salisbury	$151,688.77	73.11	Relatively High	94.51	Very High	5.53
Spencer	$51,558.68	71.05	Relatively High	95.21	Very High	5.52

5.7.6. Hail Hazard Vulnerability and Impact

All the inventoried assets in the Region and all the jurisdictions in the planning are exposed to hail. Agriculture is typically the most affected by Hail because it causes severe crop damage and even a minor storm with small size Hailstones can have a devastating effect. As well, damage to vehicles, roofs (residential/commercial), and landscaping are the other things most damaged by hail. A Vulnerability Assessment for property can be quite difficult for Hail. Any specific vulnerability of individual assets depends on individual design, building characteristics, and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk assessment but may be considered during future updates and mitigation strategies.

5.7.7. Future Vulnerability: Problem Statements

People

The NRI estimates that there will be 5.5 hail events in Iredell County and 5.1 hail events in Rowan County per year. Hail events can cause widespread property damage and injury to those impacted by hail. To prevent future vulnerabilities to hail, the planning area should consider educating residents about reduction of hail damages or risk of injury to residents in the planning area.

Changes in Development or Housing Characteristics

Increased development is not projected to increase the risk of hail in the planning area.

Economy

Hail can have widespread negative impacts on crops and agriculture, resulting in significant losses associated with hail damage. Additionally, economic strain could result from property damage or injuries caused by hail which could incur financial strain on those impacted by hail.

Natural Environment

Hail can have widespread negative impacts on crops and agriculture, and secondary impacts from hail melt can cause river flooding and flash flooding. Hail can have negative impacts on agriculture, and other secondary impacts of hail melting can cause risk for river and flash flooding. Hail can lead to soil compaction and erosion, degrading the soil quality and reducing agricultural productivity. Hail can also harm flowering plants and crops which pollinators rely on for food, causing impacts to plant ecosystems. Tree damage can create damage which makes them more susceptible to disease, pests, or other long-term health issues which can impact long-term health of those ecosystems.

First Responders

Response during hail events could lead to first responders being injured due to hail and the secondary impacts of hail events. Additional vulnerability can be attributed to damaged equipment delaying response time, increased call volumes to respond to injuries or property damage, or hazardous conditions caused by the hail which can slow down response times.

Continuity of Operations

Hail events have the potential to disrupt power and communications infrastructure which would limit the continuity of operations after a hazard event. This includes delays in emergency response and restoration of power due to hail damage or hazards.

Climate Change

Climate change can potentially produce more large hail by fueling stronger thunderstorm updrafts. Stronger updrafts suspend hail high within storms for longer, enabling them to grow and produce larger hailstones. Records show an increase in the number of large hailstones across the whole United States in recent years, and while there is also evidence of an increase in the number of hail days per year, the inherent uncertainty in reported hail size reduces the confidence in any projections. In fact, while the trend across much of the United States suggests more hail events with larger hail stones, in at least one study a decrease in hail frequency and damage potential is predicted over eastern and southeastern regions in spring and summer, due to a significant increase in melting that mitigates gains in hail size from increased buoyancy.

Recommendations

To reduce vulnerability to hail damages, the planning area should consider implementing the following mitigation measures:

- **Public Education:** Create a public education program that educates the residents about reduction of hail damage and reduction of risk from hail events.
- **Increased Emergency Response Capability:** Ensure that first responders are trained to respond safely to hail events which includes protocol for injury prevention and response.

5.8. Hurricane and Tropical Storm

5.8.1. Hazard Description

Hurricanes and tropical storms are classified as cyclones and defined as any closed circulation developing around a low-pressure center in which the winds rotate counterclockwise in the Northern Hemisphere (or clockwise in the Southern Hemisphere) and whose diameter averages 10 to 30 miles across. A tropical cyclone refers to any such circulation that develops over tropical waters. Tropical cyclones act as a "safety-valve," limiting the continued build-up of heat and energy in tropical regions by maintaining the atmospheric heat and moisture balance between the tropics and the pole-ward latitudes. The primary damaging forces associated with these storms are high-level sustained winds, heavy precipitation, and tornadoes.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, warm sea surface temperature, rotational force from the spinning of the earth, and the absence of wind shear in the lowest 50,000 feet (about twice the height of Mount Everest) of the atmosphere. Most hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season, which encompasses the months of June through November. The peak of the Atlantic hurricane season is in early to mid-September and the average number of storms that reach hurricane intensity per year in the Atlantic basin is about six.

As an incipient hurricane develops, barometric pressure (measured in millibars or inches) at its center falls and winds increase. If the atmospheric and oceanic conditions are favorable, it can intensify into a tropical depression. When maximum sustained winds reach or exceed 39 miles per hour, the system is designated a tropical storm, given a name, and is closely monitored by the National Hurricane Center (NHS) in Miami, Florida. When sustained winds reach or exceed 74 miles per hour the storm is deemed a hurricane. Hurricane intensity is further classified by the Saffir-Simpson Scale shown in Table 5- 22, which rates hurricane intensity on a scale of 1 to 5, with 5 being the most intense.

Table 5- 22: Saffir-Simpson Hurricane Wind Scale and Descriptions from NOAA[23]

Category	Sustained Winds	Damage Types
1	74-95 mph	**Very Dangerous Winds:** Could potentially damage well-constructed frame home roofs, shingles, gutters, and vinyl siding.

[23] National Oceanic and Atmospheric Administration [NOAA]. (n.d.-a). Saffir-Simpson Hurricane Wind Scale. National Hurricane Center and Central Pacific Hurricane Center. https://www.nhc.noaa.gov/aboutsshws.php

Category	Sustained Winds	Damage Types
2	96-110 mph	**Extremely Dangerous Winds:** Could potentially cause major roof and siding damage on well constructed frame homes. Shallow trees could be snapped uprooted or uprooted and block roads. Near-total power loss is expected with power outages that range from several days to weeks.
3	111-129 mph	**Devastating Damage:** Well-constructed frame homes could sustain major roof damage or removal of roof decking. Many trees will be will be snapped and or uprooted and block many roads. Electricity and water will be unavailable from several days to weeks after the storm passes.
4	130-156 mph	**Catastrophic Damage:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and or some exterior walls. Most trees will be snapped or uprooted. Power poles will be downed and will isolate residential areas residential areas. Power outages can last from weeks to months and the area will be mostly uninhabitable for weeks or months.
5	157 mph or higher	**Catastrophic Damage:** A high percentage of framed homes will be destroyed with roof failure and wall collapse. Fallen trees and power poles will isolate residential areas and cause power outages for weeks to months. Most of the area will remain uninhabitable for weeks to months.

The Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds and barometric pressure, which are combined to estimate potential damage. Categories 3, 4, and 5 are classified as “major” hurricanes and, while hurricanes within this range comprise only 20 percent of total tropical cyclone landfalls, they account for over 70 percent of the damage in the United States. Table 5- 22 describes the damage that could be expected for each category of hurricane. Damage during hurricanes may also result from spawned tornadoes, storm surge, and inland flooding associated with heavy rainfall that usually accompanies these storms.

5.8.2. Location

Hurricanes and tropical storms threaten the entire Atlantic and Gulf seaboard of the United States. While coastal areas are most directly exposed to the brunt of landfalling storms, their impact is often felt hundreds of miles inland and they can affect the Iredell Rowan Region. All areas in the Iredell Rowan Region are equally susceptible to hurricanes and tropical storms.

5.8.3. Extent

Hurricane extent is defined by the Saffir-Simpson Scale which classifies hurricanes into Category 1 through Category 5 (Table 5- 22). The greatest classification of hurricane to traverse directly through the Iredell Rowan Region was a tropical storm (Not Named storms in 1896 and 1940) in Rowan County which carried tropical force winds of 62 knots upon arrival in the region. The following list is the greatest extent of hurricane winds to pass through the area, though it should be noted that stronger storms could impact the region without a direct hit:

- Iredell County: Hurricane Gracie, Tropical Storm (53 knots)
- Rowan County: Not Named 1896 and 1940 Storms, Tropical Storm (62 knots)

5.8.4. Historical Occurrences

According to the NHC's historical storm track records, 62 tropical storm and tropical depression tracks have passed within 75 miles of the Iredell Rowan Region since 854[24]. This includes 32 tropical depressions and 30 tropical storms. Of the recorded storm events, 15 traversed directly through the Iredell Rowan Region as shown in Figure 5- 26, Figure 5- 27, and Figure 5- 28. National hurricane data was downloaded from NOAAs NCEI and is used in Figure 5- 26, Figure 5- 27, and Figure 5- 28. The line shapefiles depict the path of the event. Varied colors were used to differentiate the various storm types that occurred in the region. The data collection is from 1955 to 2022.

[24] These storm track statistics do not include extra-tropical storms. Though these related hazard events are less severe in intensity, they may cause significant local impact in terms of rainfall and high winds.

Hurricane Hazard Areas - Regional

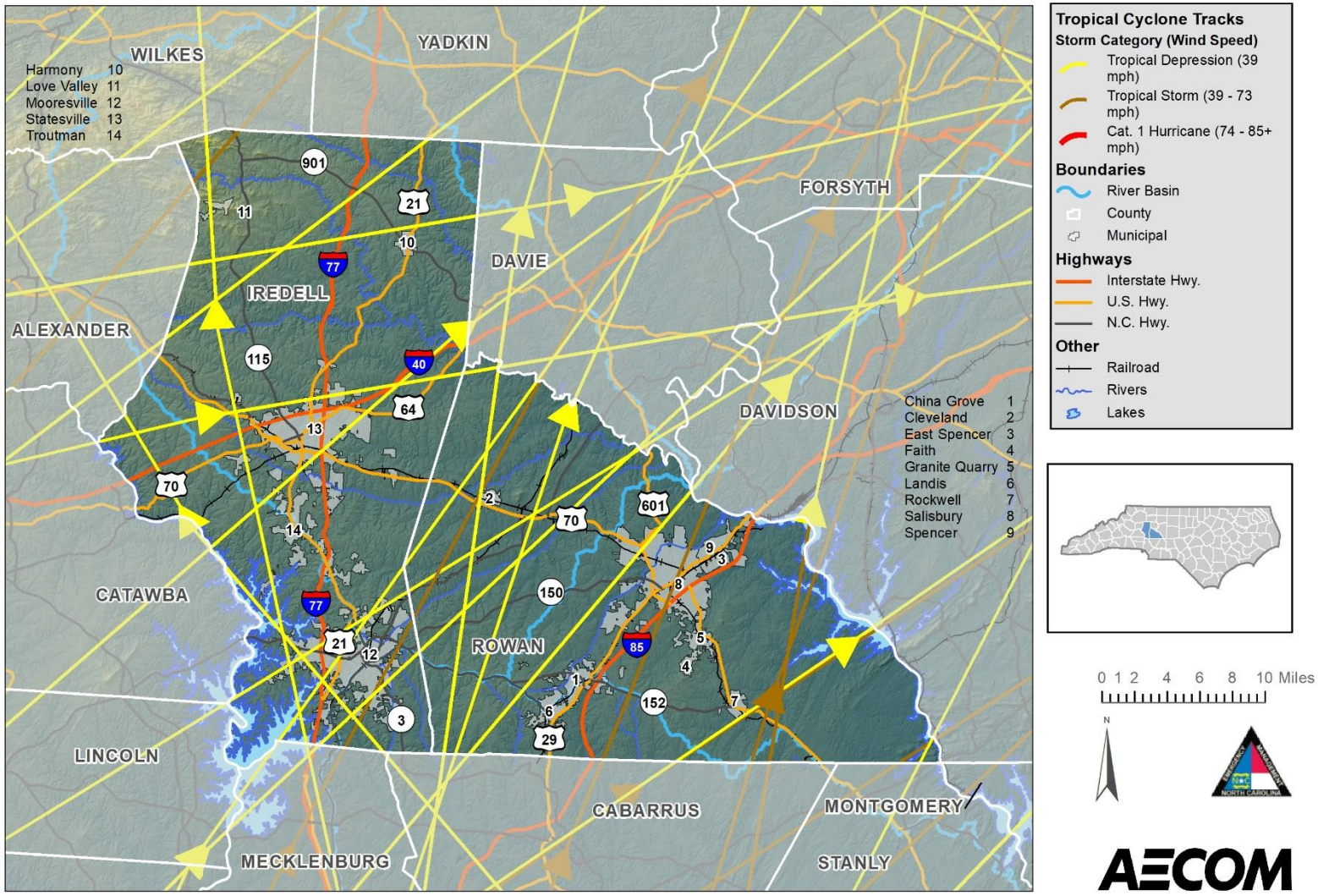


Figure 5- 26: Regional Hurricane Hazard Areas

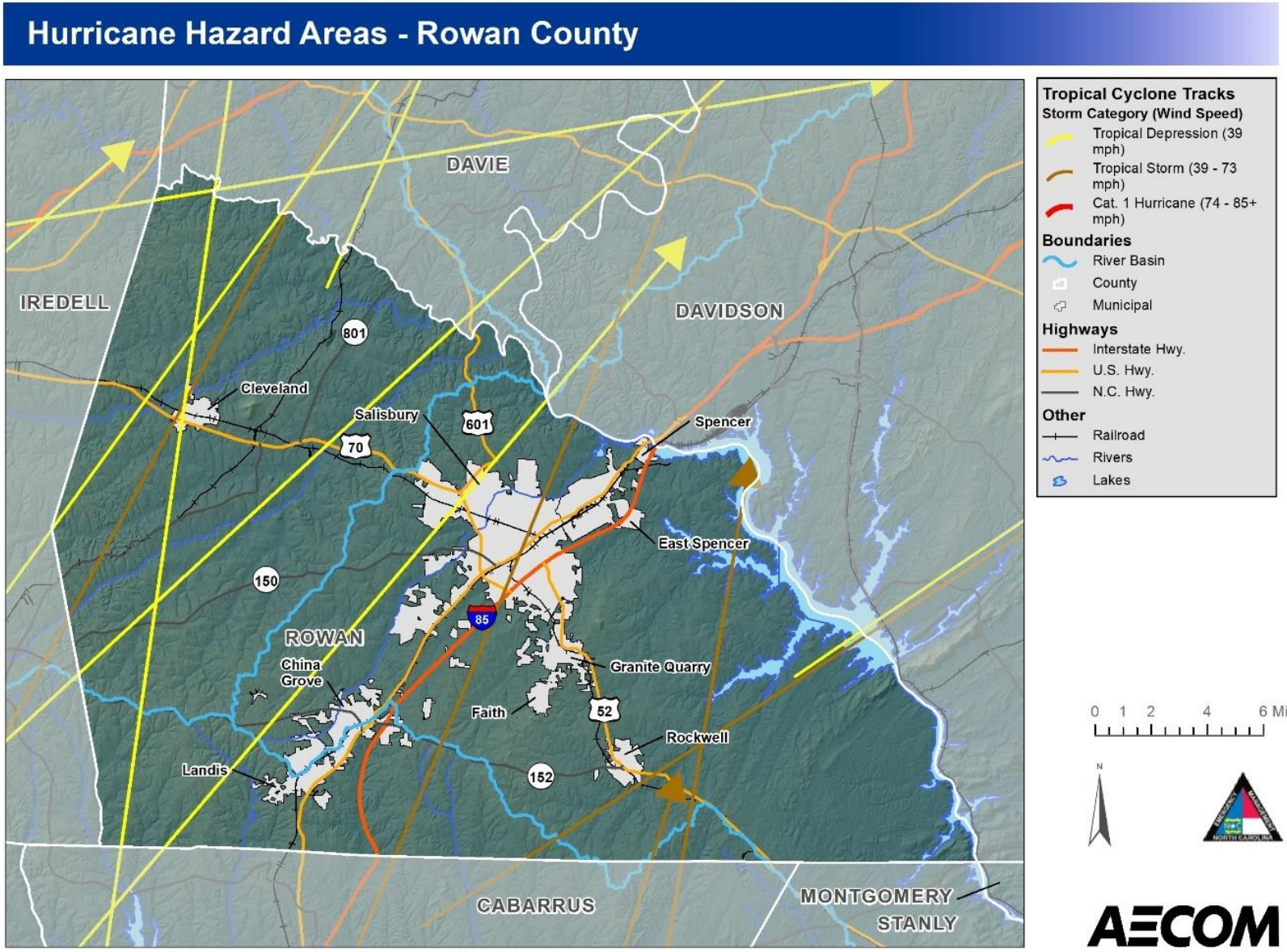


Figure 5- 28: Hurricane Hazard Areas in Rowan County

The National Climatic Data Center did not report any events associated with a hurricane or tropical storm in the Iredell Rowan Region between 1950 and 2024. However, federal records indicate that three disaster declarations were made in 1989 (Hurricane Hugo), 1999 (Hurricane Floyd), 2004 (Tropical Storm Frances), 2018 (Hurricane Michael), 2020 (Tropical Storm Zeta), and 2022 (Tropical Storm Ian). Flooding is the greatest hazard of concern with hurricane and tropical storm events in the Iredell Rowan Region. Most events do not carry winds that are above that of the winter storms and straight-line winds received by the Iredell Rowan counties. The occurrences of tropical storms and hurricanes within the planning area are listed below:

Hurricane Hugo – September 22-24, 1989

Hurricane Hugo was one of the largest storms on record in the Atlantic Basin that produced high winds and dumped heavy rains over much of North Carolina and South Carolina. Hugo reached a peak level of Category 5 on the Saffir-Simpson scale and made landfall near Isle of Palms in South Carolina as a Category 4, eventually passing over Charlotte and much of the surrounding area as a Category 1 storm. Although the storm caused its greatest damage in South Carolina, over 1,000 structures were destroyed or severely damaged in North Carolina, causing over $1 billion (about $3.1 per person in the US) dollars in damages. Wind gusts reached over 40 mph, and numerous trees were downed throughout much of south and western North Carolina. Hurricane Hugo devastated the Iredell Rowan Region, causing structural, non-structural (i.e., power distribution system), and agricultural damages of more than $31 million in Rowan County and $48 million in Iredell County.

Hurricane Floyd – September 16, 1999

Hurricane Floyd, combined with the weather conditions before and immediately after this hurricane, resulted in the most severe flooding and devastation in North Carolina history. In North Carolina, the storm resulted in 35 fatalities, over $3 billion (about $9.2 per person in the US) in damages, 7,000 destroyed homes, 56,000 damaged homes, 1,500 people rescued from flooded areas, and more than 500,000 customers (about half the population of Montana) without electricity. Additionally, the flooding caused an estimated $813 million in agricultural losses affecting 32,000 farmers. There was also significant loss of livestock including 2,860,827 poultry, 28,000 swine, and 619 cattle. Hurricane Floyd produced heavy rainfall and high winds for the region. With the most significant rain and wind recorded along the coast of NC the Region still received minimal flooding and wind damage.

Tropical Storm Frances – September 7-8, 2004

Tropical Storm Frances was a slow-moving, large storm that dumped heavy rains over the eastern United States. The remnants of Frances produced 5 to 15 inches of rain across the North Carolina Mountains and Foothills with reports of 12 to 15 inches of rain along the higher terrain and isolated reports of over 18 inches. Wind gusts reached between 40 and 60 mph along the Appalachian Mountains and numerous trees were downed. Frances caused significant crop damage totaling $55 million statewide. North Carolina residents received almost $20.6 million in federal disaster assistance following the storm. Due to the path of Tropical Storm Frances hitting NC in the western portion of the state, the region did not see the typical high

winds from a tropical storm but did see heavy rainfall which recorded over 9 Inches of rain and multiple reports of flash flooding.

Hurricane Michael – October 8, 2018

Michael originated as a Category 5 hurricane that came up the Gulf of Mexico and first hit land around the Florida/Georgia border. Tropical storm Michael gradually weakened as it tracked from the South Carolina Midlands through portions of the South Carolina and North Carolina Piedmont throughout the 11th. Gusty winds increased during the daylight hours on the east side of the storm track, with numerous trees blown down, especially across Piedmont. Flooding continued east for days after the storm hit. Iredell County was included in the Presidential Disaster Declaration. Hurricane Michael caused multiple flash flooding events and multiple power outages in the region due to high winds. The storm also caused 3 deaths in Iredell County due to a fallen tree.

Tropical Storm Zeta - 10/29/2020[25]

Zeta made its initial landfall in southeastern Louisiana as a Category 3 Hurricane before weakening south of Tuscaloosa, Alabama while traveling north towards the southern Appalachian Mountains. NC saw tree and powerline damage causing significant power outages throughout the western portion of the state. Iredell County reported widespread downed trees with over 200 falling on powerlines and some falling on a few homes, with the storm leaving over 400,000 customers (about half the population of Delaware) without power in NC. 3-5 inches of rain were reported locally which resulted in extensive flash flooding[26]. Homes in Rowan County were also reportedly damaged due to the storm in North Carolina and about $550 million in damage was reported in NC and SC due to Zeta. The NCEI Storm Events Database reports that in Iredell and Rowan Counties there was $200,000 and $50,000 of property damage reported, respectively[27].

Tropical Storm Ian - 9/30/2022[28]

By September 27, another period of rapid intensification caused Ian to be declared a major hurricane before making landfall as a category 3 hurricane measuring at 110-kts. The center of the hurricane passed through the southeast Gulf of Mexico and made landfall near Punta Gorda, Florida, measuring 125 kts and moving over northeast across Florida before weakening to a tropical storm with maximum sustained winds of 60 kts on September 29. Ian traveled over the western Atlantic and interacted with a trough over the eastern portion of the United States

[25] Blake, E., Berg, R., Hagen, A., & National Hurricane Center. (2021). Tropical Cyclone Report Hurricane Zeta. In National Hurricane Center (No. AL282020). Retrieved June 7, 2024, from https://www.nhc.noaa.gov/data/tcr/AL282020_Zeta.pdf

[26] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

[27] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

[28] Bucci, L., Alaka, L., Hagen, A., Delgado, S., Beven, J., & National Hurricane Center. (2023). Tropical Cyclone Report: Hurricane Ian. In National Hurricane Center (Report No. AL092022). Retrieved June 7, 2024, from https://www.nhc.noaa.gov/data/tcr/AL092022_Ian.pdf

and accelerated back towards South Carolina at 70 kts on September 30. Maximum inundation due to storm surge was 3 to 5ft in Brunswick County. The storm produced 15 tornadoes in the US, with the final tornado occurring in NC on September 30.

Ian then moved over North Carolina as an extratropical cyclone on October 1. There were storm-force gusts of up at least 39mph and up to 50mph throughout NC, with stations at Mount Mitchell reporting gusts of up to 54.28 mph[29]. The storm was also indirectly responsible for 90 casualties in the US, with 5 casualties in NC, and there were 4.45 million customers (about twice the population of New Mexico) that lost power in the US, with 579,000 customers (about half the population of Hawaii) losing power in NC alone. The NCDC reports $10,000 of damage related to Tropical storm Ian[30].

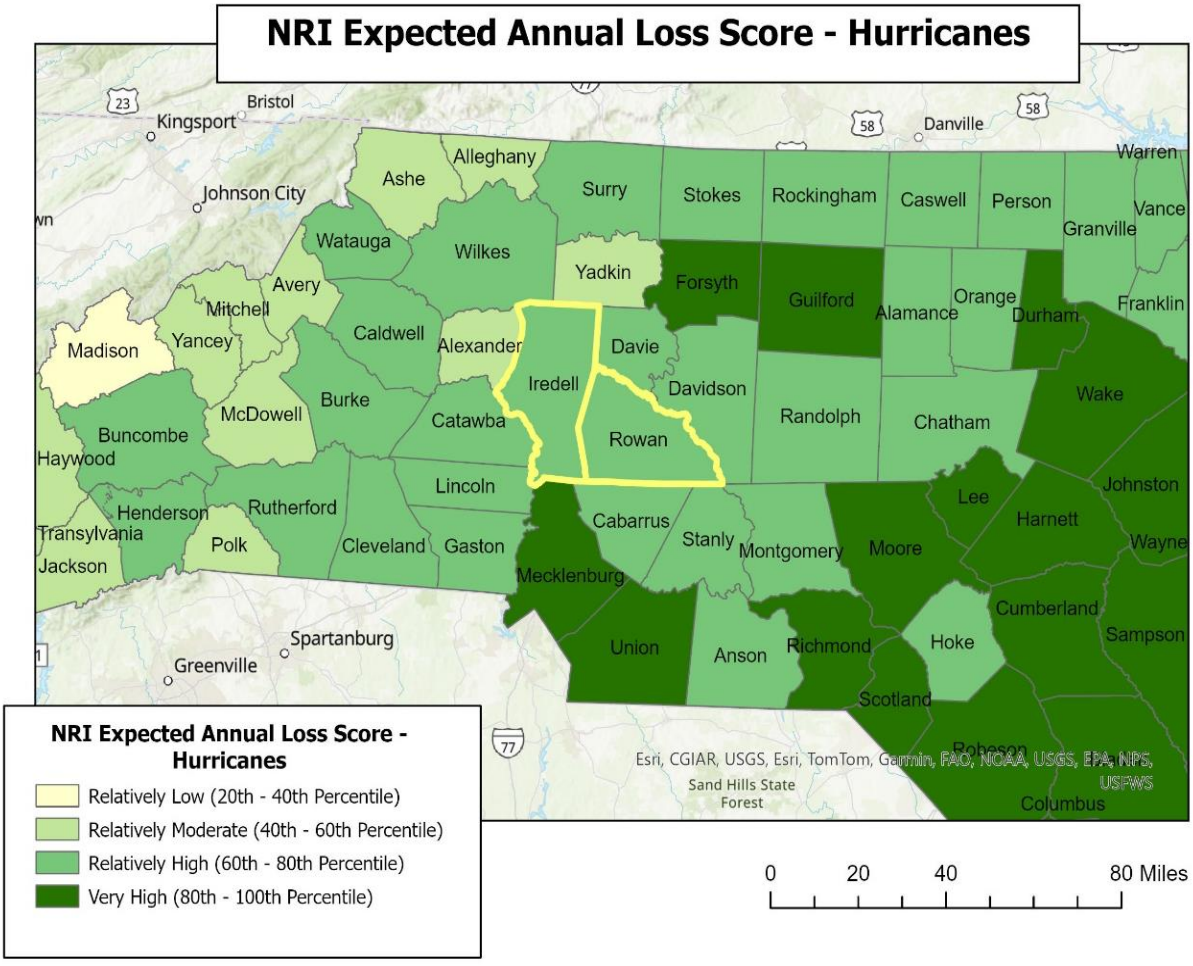


Figure 5- 29: NRI EAL Score for Hurricanes Iredell and Rowan and the Surrounding Counties

[29] Davis, C. (2022, October 3). Rapid reaction: Windy, wet Ian sweeps through North Carolina - North Carolina State Climate Office. NC State Climate Office Climate Blog. https://climate.ncsu.edu/blog/2022/10/rapid-reaction-windy-wet-ian-sweeps-through-north-carolina/

[30] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

5.8.5. Probability of Future Occurrences

The NRI uses Hurricane data from 1851 to 2021 to determine risk and loss estimates for hurricane events. According to the NRI, the planning area is expected to experience 1 hurricane event every 10 years, or 0.1 events per year. The planning area is at a relatively low EAL Rating and Risk Index Rating for hurricanes. For more information about NRI census tract level vulnerability, risk, and expected impacts, see Appendix K.

Table 5- 23: NRI Hurricane Risk Values for Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Low	Relatively Low
	Value	$2,400,000	$2,000,000
	Frequency	0.1	0.1
Risk Index	Rating	Relatively Low	Relatively Low
	Score	75.9	76.3
Historic Loss Ratio		Relatively Low	Relatively Low

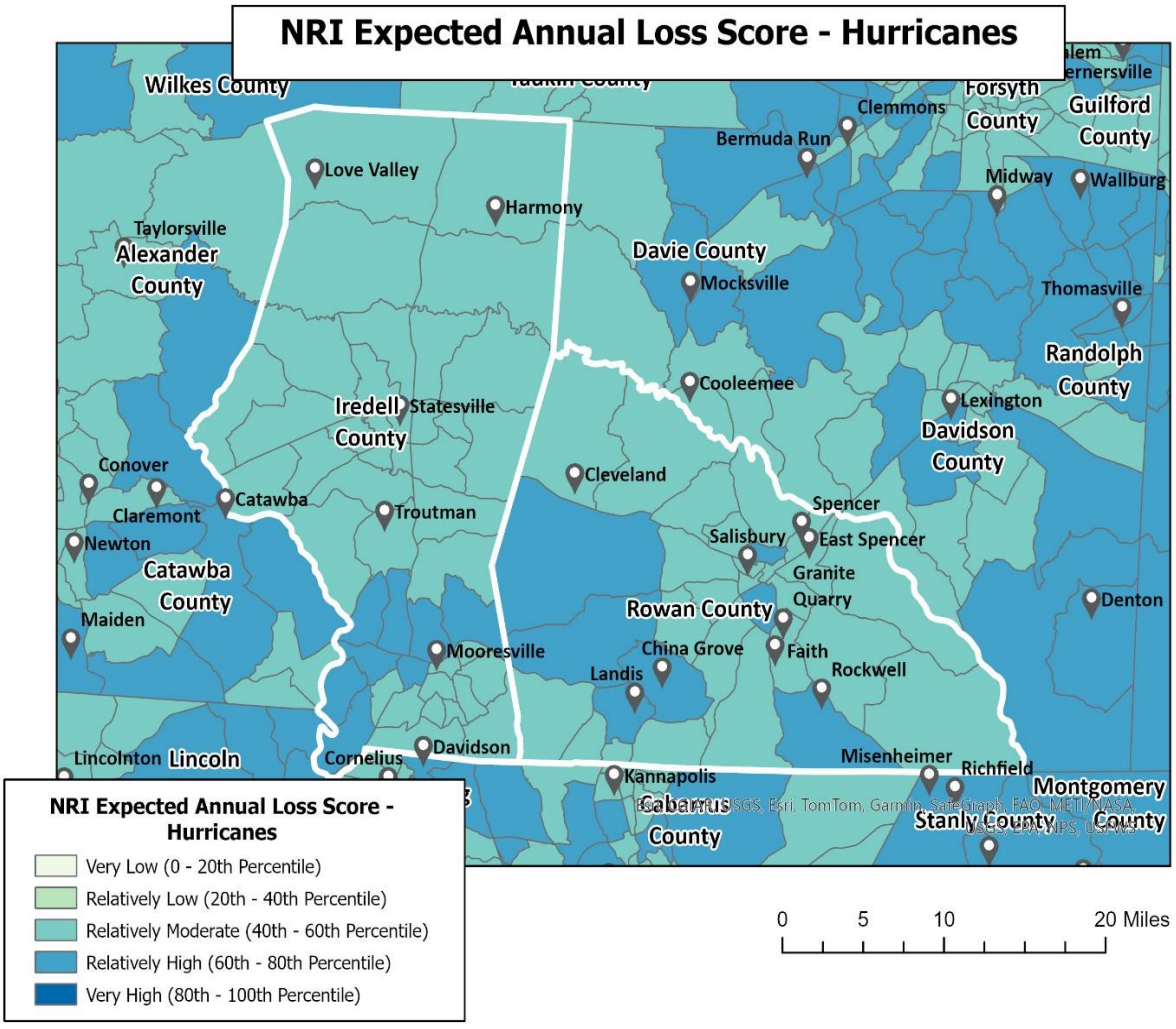


Figure 5- 30: NRI EAL Score for hurricanes for Census Tracts within Iredell County and Rowan County

Table 5- 24: NRI hurricane data for the jurisdictions in the planning area based on the census tracts in each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$298,709.08	52.21	Relatively Moderate	51.46	Relatively Moderate	0.0766
Harmony	$111,687.77	58.78	Relatively Moderate	51.73	Relatively Moderate	0.082
Love Valley	$15,175.19	42.30	Relatively Moderate	51.85	Relatively Moderate	0.08
Mooresville	$1,177,643.77	59.07	Relatively Moderate	53.20	Relatively Moderate	0.085
Statesville	$1,334,210.81	58.14	Relatively Moderate	52.25	Relatively Moderate	0.084
Troutman	$279,280.52	59.38	Relatively Moderate	53.06	Relatively Moderate	0.088
Rowan County *(Unincorporated Area)*	$107,652.02	59.68	Relatively Moderate	52.81	Relatively Moderate	0.088
China Grove	$221,541.09	58.78	Relatively Moderate	51.93	Relatively Moderate	0.082
Cleveland	$134,414.99	53.94	Relatively Moderate	52.38	Relatively Moderate	0.0818
East Spencer	$154,264.97	54.59	Relatively Moderate	49.82	Relatively Moderate	0.0683
Faith	$121,879.15	53.31	Relatively Moderate	50.25	Relatively Moderate	0.0584
Granite Quarry	$151,043.24	52.64	Relatively Moderate	50.22	Relatively Moderate	0.0592
Landis	$180,018.12	56.09	Relatively Moderate	52.07	Relatively Moderate	0.082
Rockwell	$46,283.06	54.76	Relatively Moderate	48.98	Relatively Moderate	0.058
Salisbury	$629,114.18	53.00	Relatively Moderate	49.74	Relatively Moderate	0.061
Spencer	$273,913.14	54.12	Relatively Moderate	49.58	Relatively Moderate	0.064

5.8.6. Hurricane and Tropical Storm Hazard Vulnerability and Impact

Continued enforcement of building codes, flood damage prevention ordinances and other local regulatory tools and policies designed to mitigate the effects of high hazard winds is expected to minimize future losses as construction and planning continue to seek higher standards. Based on historical events the most significant local impacts for the Region regarding future events will be damage to trees (and the requisite management of vegetative debris) and widespread power outages to the area. For more information about the buildings, people, and high loss buildings at risk of hurricane and tropical storm hazards, please see Appendix D.

5.8.7. Future Vulnerability: Problem Statements

People

Iredell and Rowan County have experienced a 7.58% and 4.88% population increase between 2018 and 2023, respectively, and the planning area expects to continue to increase in population for the near future. Iredell County is expected to grow by 20% between 2020 and 2030, with Troutman and Mooresville currently experiencing the most growth. Rowan County is

expecting a conversion of 13,000 to 28,000 acres (about the area of Manhattan) of farmland to primarily low residential development between 2016 and 2040 to accommodate the increase in growth and development.

Iredell and Rowan County may have populations that are disproportionately impacted by natural hazards due to lack of internet access, access to computers, or lack of telephone service. In Iredell County, 9.4% of households report that they do not have access to the internet, 6.5% report that they do not have access to a computer, and 0.9% report that they do not have telephone service in their housing unit. In Rowan County, 14.7% of households report that they do not have access to the internet, 10% report that they do not have access to a computer, and 0.8% report that they do not have telephone service in their housing unit. This can create a significant barrier for individuals who do not have the ability to receive telephone signal who may not get emergency natural hazard notification in the event of severe weather. This also creates a barrier to access material to prepare for severe weather, as the internet is being increasingly relied upon to distribute vital information about storm preparedness, severe weather occurrences, and emergency alert information.

Special considerations should also be made for those who may have limited mobility such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the large portion of residents who may need extra assistance or support in the event of severe weather, it is important that each jurisdiction in the planning area consider special precautions in the event of emergencies.

In Iredell and Rowan Counties, there are 3.2% and 6.5%, respectively, of residents that do not have access to a vehicle in their household. This can create a significant challenge in the event of evacuation orders or the need for urgent evacuation in the event of impending severe weather that presents a significant threat to human life.

Changes in Development or Housing Characteristics

There is no expected increase of vulnerability of the planning area for experiencing hurricane or tropical storm events associated with increased development or housing. Increased development in the future means that there will be more structures at risk in the future.

Economy

Hurricane and tropical storm events can impose major financial strain on the planning area because of disruption of continuity of operations, damage infrastructure, damage property, damage critical facilities, and damage critical infrastructure. This includes economic strain on individuals, businesses, government, and overall operations associated with damage of critical infrastructure, replacement or repair of property, damage to buildings, and damage to critical facilities.

Natural Environment

Hurricanes and tropical storms can significantly damage the environment by carrying debris and uprooting trees from high winds. This can also lead to habitat changes and loss of vegetation,

such as uprooting trees and reducing the number of leaves in the forest, which alters the habitat for wildlife. Also, hurricanes and tropical storms can create hazardous material contamination due to flooding or damage to storage containers. To address the potential impacts to the natural environment caused by hurricane events, the jurisdictions in the planning should consider the following mitigation measures:

- Conduct detailed hazardous materials inventory to confirm and document hazardous materials in case of severe weather that may damage property and lead to hazardous materials release.
- Develop a post-hurricane protocol to assess and clean up potential hazardous materials release after flooding or other hurricane related damages impacts areas where hazardous materials are stored.

First Responders

During hurricane or tropical storm events the ability of first responders to respond to emergencies can be significantly interrupted or reduced due to potentially limited communication capabilities, damages critical infrastructure for traveling, interruptions in power supply, and potentially damaged emergency response facilities. As the planning area continues to grow in population and increase in development, the planning area should consider periodically reevaluating emergency response capabilities to reduce the vulnerabilities for first responders. Jurisdictions in the planning area should consider the following mitigation actions:

- Review emergency response procedures to regularly update responsibilities, areas at most risk during natural hazard events, and protocols for hurricane or tropical storm events as risk changes to the planning area.
- Maintain an advanced hurricane hazard system that utilizes real-time data to alert communities of impending hurricane risks.
- Establish clear evacuation protocols including evacuation routes, procedures, designated shelters, and alternative transportation options for vulnerable populations in emergencies.

Continuity of Operation

Hurricane and tropical storm events can significantly impact continuity of operations by causing damage to critical infrastructure, damaging critical facilities, damaging roads, reducing the communication capabilities, impeding utilities, and potentially disrupting power supply. Depending on the damage from the storm event, continuity of operations can be disrupted for extended periods of time while utilities are restored, roads are cleared, and damage is assessed. To improve the ability to continue day to day operations, the planning area should consider the following mitigation actions:

- Periodically review the inventory of critical resources, emergency response personnel, and emergency response supplied to ensure continued operations after hurricane events and recover promptly.
- Schedule regular reviews of continuity of operations plans based on new risk, lessons learned, changes in operations, and changes in emergency response capabilities.

- Develop a robust communication plan to keep residents and emergency response personnel updated on alerts and instructions during periods of reduce communication capabilities.

Climate Change

Changing climate and weather conditions are likely to impact the number and intensity of future hurricane events in North Carolina. The amount of influence that human-induced climate warming has had on hurricanes to date is believed to be small, and this, in conjunction with observational limitations and large natural variations, makes it difficult to establish whether there are yet any clear trends in hurricanes that can be attributed to human-induced warming.

Studies conducted by the NOAA have predicted that while there may be less frequent, low-category storm events (Tropical Storms, Category 1 Hurricanes), there will be more high-category storm events (Category 4 and 5 Hurricanes) in the future. In other words, there may be fewer hurricanes overall in any given year, but when hurricanes do form, it is more likely that they will become larger storms that can cause massive damage.

Numerous previous studies of hurricanes and climate change have been that the strongest storms will become stronger as the climate continues to warm, there is now less consistency regarding how hurricane frequency will change. Some earlier projections of decreases in hurricane activity now appear less confident considering more recent high-resolution modeling studies.

On a global scale, it is predicted with high confidence that the intensity of the strongest hurricanes is likely to increase with a warming climate. For specific regions such as North Carolina, the confidence in this outcome is lower, but there is no known reason to suggest that North Carolina will not experience stronger hurricanes in future.

5.9. Lightning

5.9.1. Hazard Description

Lightning is a discharge of electrical energy resulting from the buildup of positive and negative charges within a thunderstorm, creating a “bolt” when the buildup of charges becomes strong enough. This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning can reach temperatures approaching 50,000 degrees Fahrenheit. Lightning rapidly heats the sky as it flashes but the surrounding air cools following the bolt. This rapid heating and cooling of the surrounding air causes the thunder which often accompanies lightning strikes. While most often affiliated with severe thunderstorms, lightning may also strike outside of heavy rain and might occur as far as 10 miles away from any rainfall.

Lightning strikes occur in small, localized areas. For example, they may strike a building, electrical transformer, or even a person. According to FEMA, lightning injures an average of 300 people and kills 80 people each year in the United States. Direct lightning strikes also can cause significant damage to buildings, critical facilities, and infrastructure by igniting a fire. Lightning is also responsible for igniting wildfires that can result in widespread damage to property. Figure 5-

31 shows a lightning flash density map for the years 2009-2018 based upon data provided by Vaisala's U.S. National Lightning Detection Network (NLDN®).

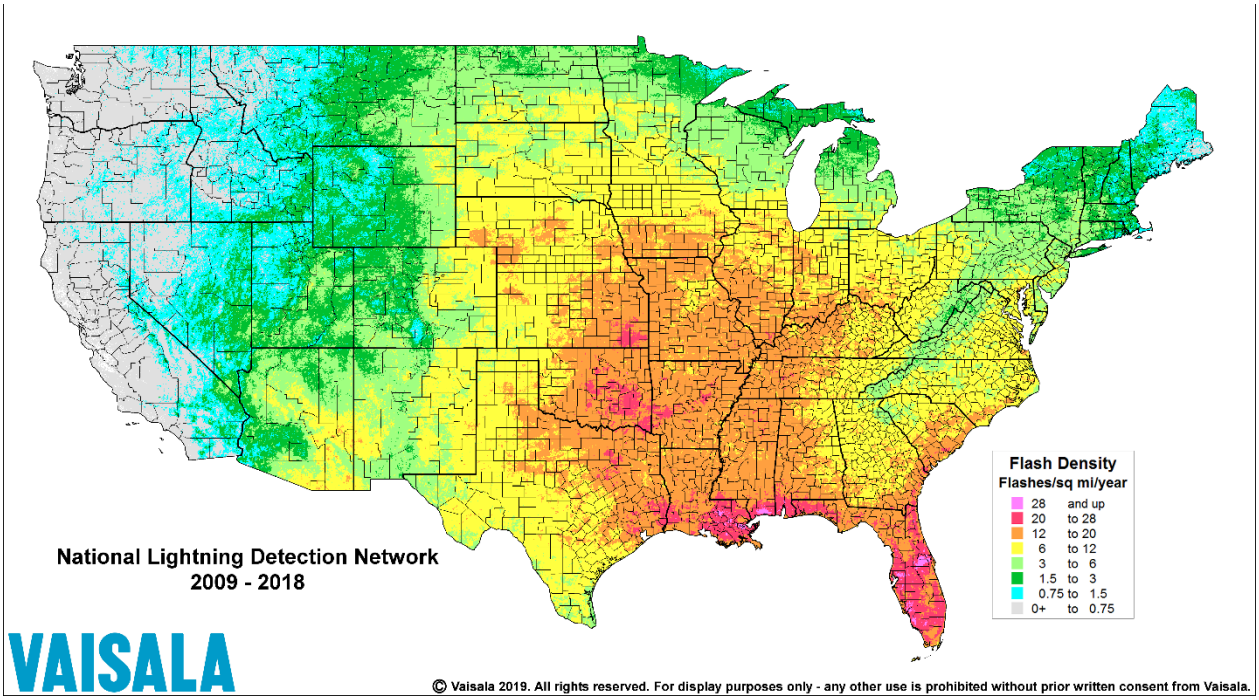


Figure 5- 31: Vaisala Lightning Flash Density from 2009-2018

5.9.2. Location

Lightning occurs randomly; therefore, it is impossible to predict where and with what frequency it will strike. It is assumed that all the Iredell Rowan Region is uniformly exposed to lightning. The figures below show the average annual cloud-to-ground lightning strikes in the Region with "High" being <100 strikes per year, "Medium" 99-50 strikes per year and "Low" being >50 strikes per year.

FEMAs NRI census tract dataset was downloaded and symbolized using the Lightning – Number of Events fields. The best available data is from (1991-2012) and applies to the following maps in Figure 5- 32, Figure 5- 33, and Figure 5- 34.

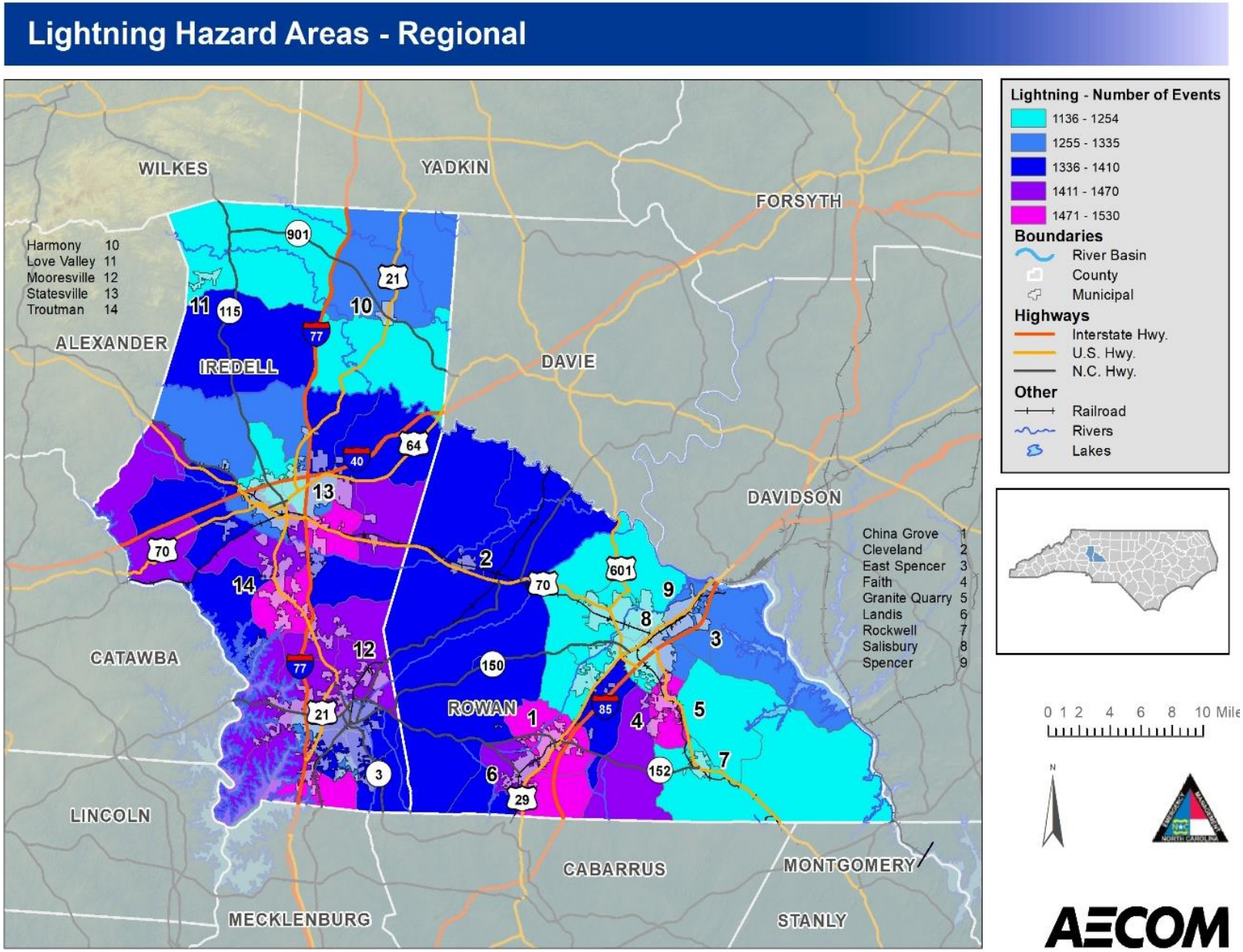


Figure 5- 32: Lightning Hazard Areas in the planning area

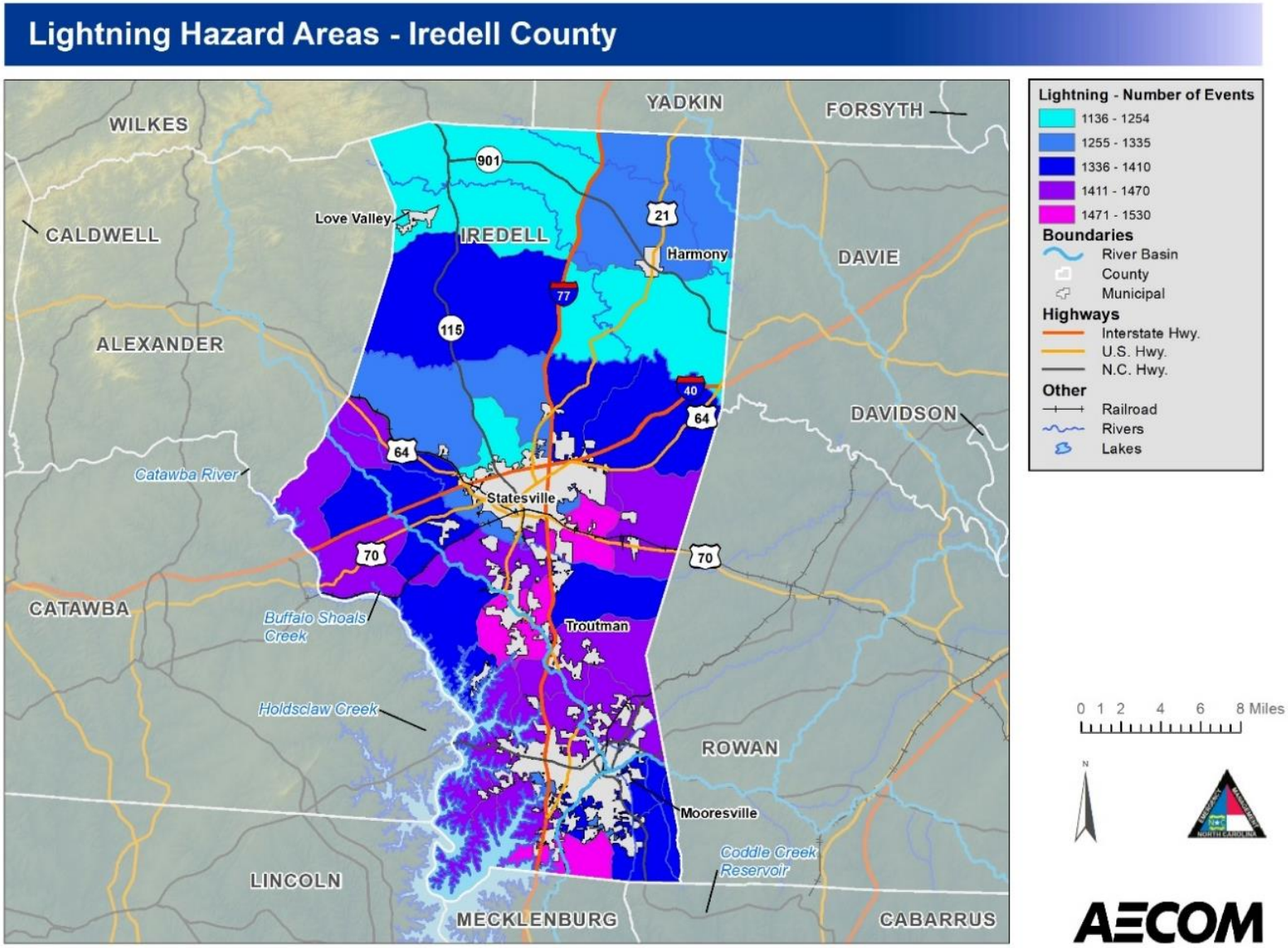


Figure 5- 33: Lightning Hazard Areas in Iredell County

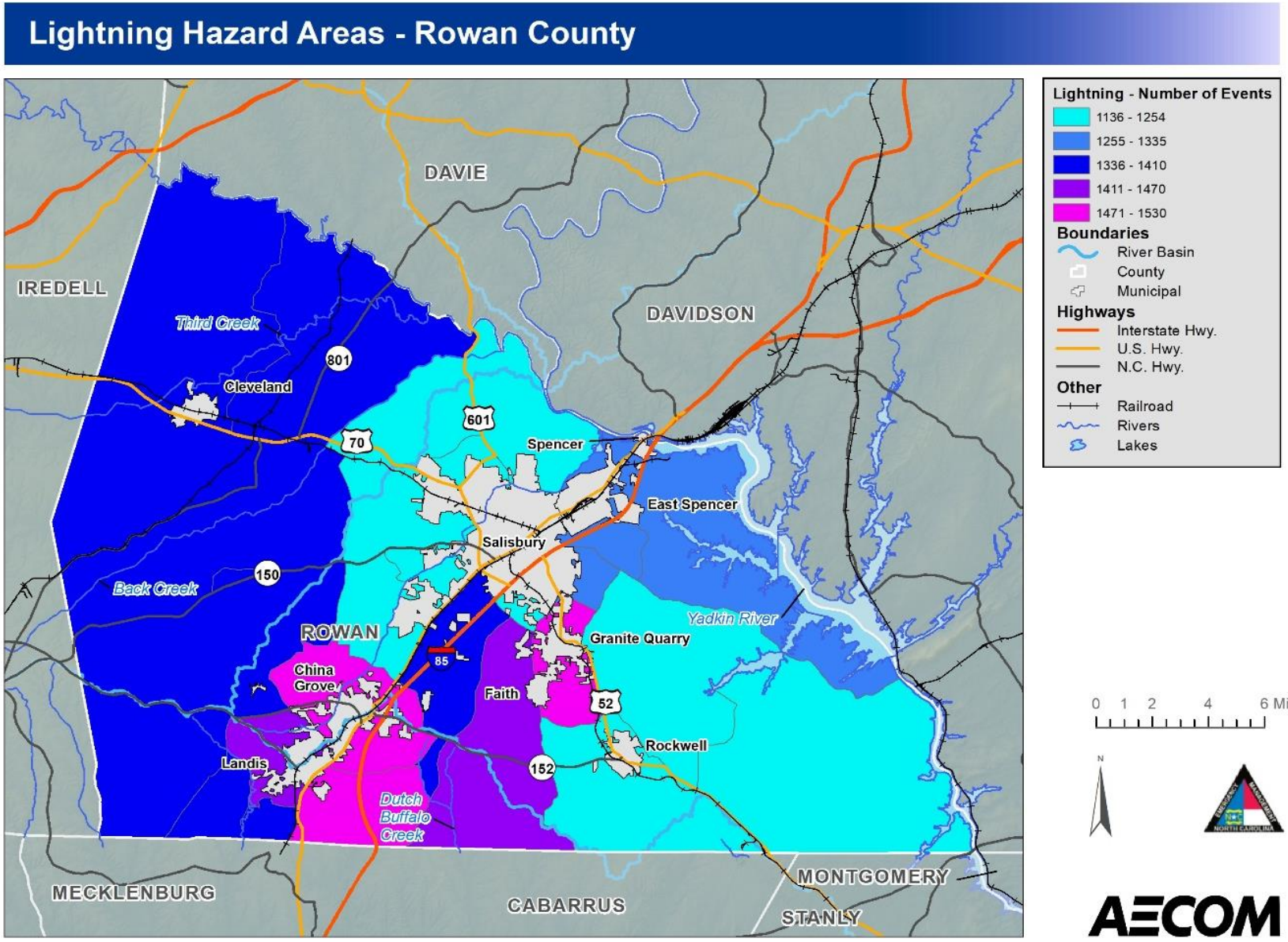


Figure 5- 34: Lightning Hazard Areas in Rowan County

5.9.3. Extent

According to the Vaisala flash density map (Figure 5- 31), the Iredell Rowan Region is in an area that experiences 3 to 6 lightning flashes per square kilometer per year. According to NCDC the worst lightning event recorded in the Region was on May 20, 2006, in the Town of Mooresville where a lightning strike ignited a fire and destroyed a newly constructed house and caused approximately $300,000 in damage. It should be noted that future lightning occurrences may exceed these figures.

Table 5- 25: Total lightning pulses, including in-cloud and cloud to ground detected by Earth Networks Total Lightning Network[31].

County	Total Lightning Pulses per year	Total Thunder Days per year
Iredell County	95,443	83
Rowan County	85,960	72

5.9.4. Historical Occurrences

According to the NCDC[32], there have been 11 noted lightning events in Rowan County and 20 events in Iredell County since 2000. These events have caused $1,569,000 of damage in the entire planning area, with $1,230,000 of property damage in Iredell County and $339,000 of property damage in Rowan County.

*Table 5- 26: NCDC reported lightning events reported in the planning area with total property damage and injuries from 2000-2024. * indicates a weather event area that is within the planning area that is not considered a town or a city.*

Location	County	Total Property Damage	Injuries	Event Date(s)
Charles*	Iredell	$150,000	0	7/25/2012
Cool Spring*		$200,000	0	7/25/2010
Elmwood*		$100,000	0	9/26/2010
Mazeppa*		$15,000	2	8/7/2003, 7/12/2010
Mooresville		$400,000	4	8/7/2003, 5/20/2006, 7/20/2006, 6/27/2007, 7/17/2010
Mooresville Airport*		$130,000	0	9/18/2009,7/11/2012, 7/13/2012
Statesville		$15,000	0	6/15/2001, 5/9/2004, 3/13/2005, 4/19/2013
Statesville Airport*		$0	1	7/23/2011
Troutman		$220,000	0	7/26/2010
Union Grove*		$0	1	1/19/2001

[31] Earth Networks. (2020). North Carolina Lightning Report. https://get.earthnetworks.com/hubfs/2021%20State%20Lightning%20Reports/Lightning_Report_NorthCarolina.pdf

[32] National Oceanic and Atmospheric Administration [NOAA]. (n.d.-b). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

Location	County	Total Property Damage	Injuries	Event Date(s)
Rockwell	Rowan	$37,000	0	8/10/2001
China Grove		$0	0	7/22/2002
Salisbury		$30,000	0	11/16/2006, 7/11/2007
Woodleaf*		$102,000	1	4/24/2009, 5/9/2009, 5/16/2010
Landis		$150,000	0	4/5/2011, 7/10/2012
China Grove Airport*		$20,000	0	7/6/2011, 3/2/2012

5.9.5. Probability of Future Occurrences

The NRI reports about lightning risk based on data from 1991 to 2012. The NRI expects Iredell County to experience 61.8 lightning events per year which are expected to cause $607,000 of damages per year. Rowan County is expected to experience 60.8 lightning events per year with $99,000 of associated damages, which is significantly less EAL per year than Iredell County. For a summary or EAL and Risk Ratings, see Table 5- 27. Figure 5- 35 shows the EAL from

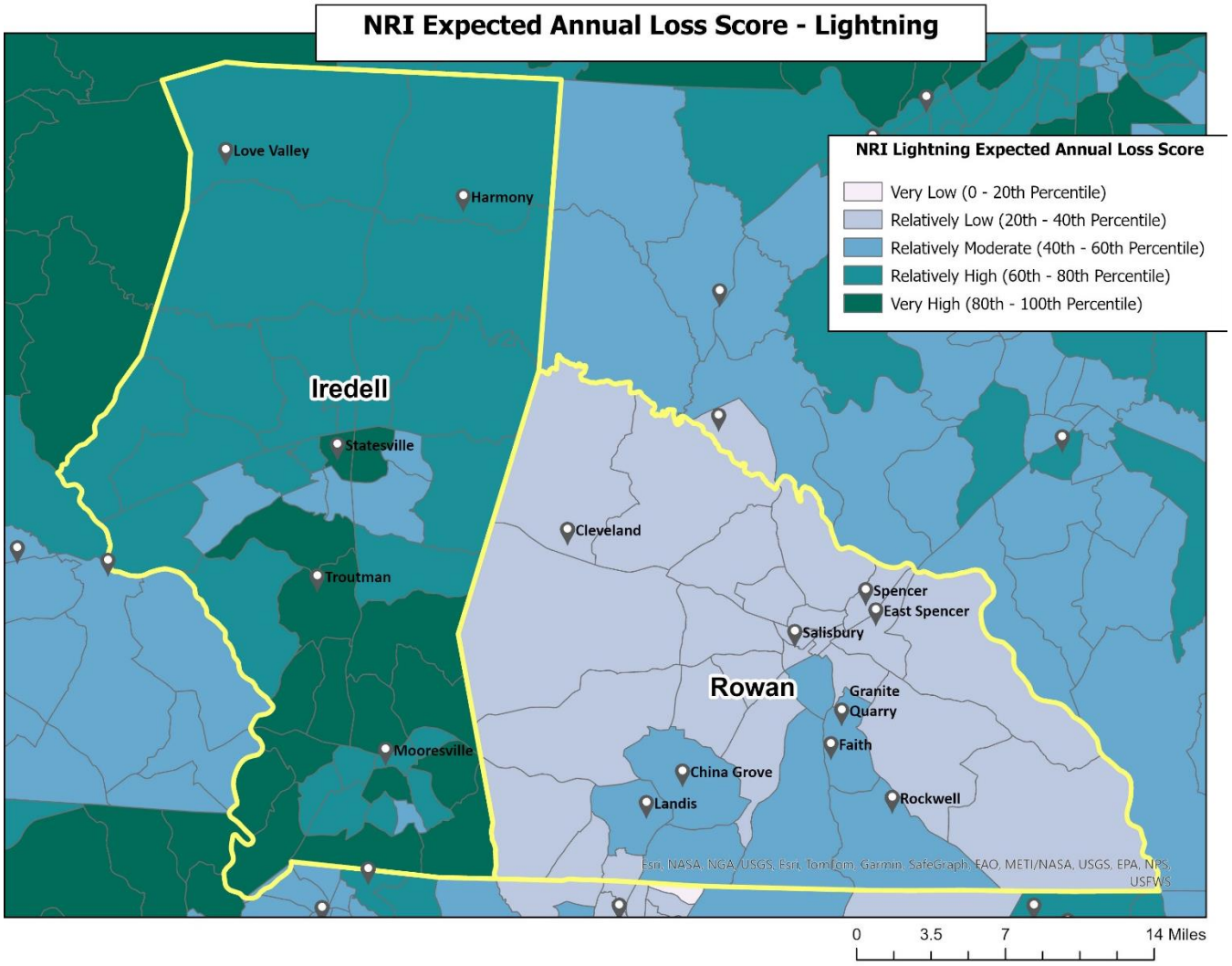


Figure 5- 35: NRI EAL Score for Lightning in Iredell County and Rowan Couty by Census Tract

lightning in the census tracts in the planning area, and for more information about census tract level NRI expected impacts, see Appendix K.

Table 5- 27: NRI Lightning Risk Values for Iredell and Rowan Counties

NRI		Iredell	Rowan
EAL	Rating	Relatively High	Relatively Low
	Value	$607,000	$99,000
	Frequency	61.8	60.8
Risk Index	Rating	Relatively Moderate	Relatively Moderate
	Score	90	57.3

Table 5- 28: NRI lightning data in each jurisdiction in the planning area based on census tracts

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$78,383.28	67.94	Relatively High	71.19	Relatively High	63.74
Harmony	$28,649.13	82.96	Very High	71.36	Relatively High	63.70
Love Valley	$4,294.16	38.71	Relatively Low	68.70	Relatively High	60.67
Mooresville	$61,162.71	39.95	Relatively Low	40.26	Relatively Moderate	60.00
Statesville	$60,195.20	60.65	Relatively High	60.98	Relatively High	62.17
Troutman	$14,328.06	40.26	Relatively Moderate	42.84	Relatively Moderate	61.50
Rowan County *(Unincorporated Area)*	$4,622.60	66.32	Relatively High	64.53	Relatively High	57.47
China Grove	$52,638.21	80.57	Very High	72.32	Relatively High	65.58
Cleveland	$28,247.31	70.34	Relatively High	71.25	Relatively High	64.24
East Spencer	$34,346.57	68.21	Relatively High	75.03	Relatively High	66.58
Faith	$36,848.45	72.82	Relatively High	67.03	Relatively High	56.86
Granite Quarry	$46,648.73	71.94	Relatively High	68.12	Relatively High	58.93
Landis	$48,104.96	77.82	Relatively High	71.64	Relatively High	66.53
Rockwell	$10,069.43	69.53	Relatively High	73.10	Relatively High	61.36
Salisbury	$180,196.27	71.95	Relatively High	69.35	Relatively High	60.36
Spencer	$73,717.63	72.00	Relatively High	71.82	Relatively High	63.24

5.9.6. Lightning Hazard Vulnerability and Impact

Lightning can occur with all thunderstorms, making all the Region and all jurisdictions susceptible. Although there were not a high number of historical lightning events reported throughout the Iredell Rowan Region via NCDC data, it is a regular occurrence accompanied by thunderstorms. In fact, lightning events will happen annually, though not all will cause damage. It can be expected that future lightning events will continue to threaten life and cause minor

property damage throughout the region. The potential for lightning strikes will continue to exist for all jurisdictions in the Region. Different geographic areas could experience varying event frequencies, but lightning strikes and associated fatalities occur mainly during the summer months. The direct and indirect impacted losses associated with these events include injury and loss of life, damage to structures and infrastructure, agricultural losses, utility failure (power outages), and stress on community resources. According to the NRI, Iredell County is expected to experience 61.8 lightning events per year and Rowan County is expected to experience 60.8 lightning events per year.

5.9.7. Future Vulnerability: Problem Statements

People

Lightning can cause severe injury or death, fires, and are often accompanied by tornadoes, high winds, thunderstorms, hail, and flash flooding. This can also lead to disruptions in utilities, reduced communication ability, and increased emergency response time. Some housing units in the planning area may be more susceptible to damage caused by lighting or accompanying natural hazards, and in Iredell County and Rowan County 12.8% and 10.7%, respectively, of housing units are Recreational Vehicles (RVs), Mobile Homes, Vans, or similar. This creates a significant vulnerability during natural hazard events and these homes may be more easily damaged. It is critical that individuals who live in these housing units are aware of impending severe storm damage.

Special considerations should be made for those who may have limited mobility such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the large portion of residents who may need extra assistance or support in the event of severe weather, it is important that each jurisdiction in the planning area consider special precautions in the event of emergencies.

The ability to prepare for severe storms may be reduced if a household lacks telephone service, internet access, or access to a computer. Limited telephone service reduces the ability to receive reverse 911 emergency alerts, and not having internet access or not having a computer may reduce residents' ability to prepare for and learn about how to prepare for severe thunderstorms and lightning. In Iredell County, only 0.9% of housing units lack telephone service, while in Rowan County, this figure is slightly lower at 0.8%. When it comes to internet access: 9.4% of households in Iredell County and 14.7% in Rowan County report not having internet access. Additionally, 6.5% of households in Iredell County and 10% in Rowan County do not have access to a computer.

To reduce vulnerability in the planning area from lightning impacts, the planning area should consider the following actions:

- Work with utilities providers to expand internet and telephone service area in areas with housing units that have limited or no access to telephone signals. This will help ensure that individuals will receive information about hazardous conditions promptly.

- Evaluate and expand emergency response resources and capabilities to account for population growth which includes creating additional shelters, increasing emergency response capabilities, and increasing the number of trained personnel to respond in the event of a natural hazard event such as lightning.

Changes in Development or Housing Characteristics

The increased growth in the planning area should not impact lightning risk throughout the planning area. But more development means that there could be increased risk of structures damages and people at risk of being injured or killed by lightning.

Economy

Economic damage to the planning area could include financial strain from property damage, damage to critical infrastructure, damage to critical facilities, disruption of utilities which may interrupt business operations, and potential injury to those in the areas impacted.

Natural Environment

Lighting can impact the natural environment in the planning area by injuring or killing wildlife and damaging trees or vegetation. Additionally, lightning strikes can start wildfires which significantly impact the natural environment by destroying ecosystems, contributing to habitat fragmentation, killing animals and plants, and reducing air quality. To prevent excessive damage from lightning strikes that may cause fires, the planning area should consider conducting debris removal regularly to reduce the overall risk of wildfires.

First Responders

There is potential for reduced capabilities in the event of lightning and coincidental natural hazards such as thunderstorms, tornados, high winds, and flooding. Lightning can cause fires which may disproportionately impact the disabled or elderly residents in the planning area who may be unable to leave their housing unit without assistance. Special considerations should be made for those who may have limited mobility such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the large portion of residents who may need extra assistance or support in the event of severe weather, it is important that each jurisdiction in the planning area consider special precautions in the event of emergencies.

Communications may be reduced during thunderstorm and lightning events, leading to reduced response capabilities and reduced ability to coordinate with other emergency response personnel. Damage to critical facilities, emergency response equipment, infrastructure, and roads may occur, which could prevent emergency personnel from responding to emergency situations. As a result, the planning area should consider the following mitigation actions:

- Maintaining a special needs registry to ensure that individuals with disabilities or who need assistance can access emergency response services in the event of an emergency.

- Encourage residents who require assistance to develop an action plan so that in the event of an emergency, such as a fire started by lightning, they can receive immediate assistance if emergency services are limited or delayed.

Continuity of Operations

Lightning, and the coinciding natural hazards that often occur at the same time, may cause fires, loss of power, damage to roads causing reduced travel capabilities, and the reduced ability to communicate. As a result, there may be impacts to day-to-day operations after lightning events. The planning area should consider scheduling regular reviews of the continuity of operations plans to better prepare for lightning events which include reevaluating responsibilities for recovery and immediate response.

Climate Change

The North Carolina Climate Science Report also suggests severe thunderstorms with associated lightning will increase due to climate change throughout the State. Global climate models consistently project an increase in the frequency of severe thunderstorm events across the United States over the mid-to late 21st century. Based on the increased frequency of extremely high increases in storm intensity are also projected for the planning area over this same period.

5.10. Severe Thunderstorm

5.10.1. Background

Thunderstorms can produce a variety of accompanying hazards including wind (discussed here), hail, and lightning[33]. Although thunderstorms affect a small area, they are dangerous and may cause substantial property damage.

Three conditions need to occur for a thunderstorm to form. First, it needs moisture to form clouds and rain. Second, it needs unstable air, such as warm air that can rise rapidly (this often referred to as the “engine” of the storm). Third, thunderstorms need lift, which comes in the form of cold or warm fronts, sea breezes, mountains, or the sun’s heat. When these conditions occur simultaneously, air masses of varying temperatures meet, and a thunderstorm is formed. These storm events can occur singularly, in lines, or in clusters. Furthermore, they can move through an area very quickly or linger for several hours. According to the National Weather Service, more than 100,000 thunderstorms occur each year, though only about 10 percent of these storms are classified as “severe.” A severe thunderstorm occurs when the storm produces at least one of these three elements: 1) hail at least one inch in diameter, 2) a tornado, or 3) winds of at least 58 miles per hour.

Thunderstorm events have the capability of producing straight-line winds that can cause severe destruction to communities and threaten the safety of a population. Such wind events, sometimes separate from a thunderstorm event, are common throughout the Iredell Rowan Region. Therefore, high winds are also reported in this section. High winds can form due to

[33] Lightning and hail hazards are discussed as separate hazards in this section.

pressure of the Northeast coast that combines with intense pressure moving through the Ohio Valley. This creates a tight pressure gradient across the region, resulting in high winds which increase with elevation. It is common for gusts of 30 to 60 miles per hour during the winter months.

Downbursts are also possible with thunderstorm events. Such events are an excessive burst of wind more than 125 miles per hour. They are often confused with tornadoes. Downbursts are caused by down drafts from the base of a convective thunderstorm cloud. It occurs when rain-cooled air within the cloud becomes heavier than its surroundings. Thus, air rushes towards the ground in a destructive yet isolated manner. There are two types of downbursts. Downbursts less than 2.5 miles wide, duration less than 5 minutes, and winds up to 168 miles per hour are called “microbursts.” Larger events greater than 2.5 miles at the surface and longer than 5 minutes with winds up to 130 miles per hour are referred to as “macrobursts”

5.10.2. Location

Straight-line winds, which in extreme cases have the potential to cause wind gusts that exceed 100 miles per hour, are responsible for most thunderstorm wind damage. One type of straight-line wind, the downburst, can cause damage equivalent to a strong tornado and can be extremely dangerous to aviation. Figure 5- 36 shows wind zones in the U.S. and shows the thunderstorm occurrences throughout the planning area. The map was produced by the FEMA and is based on 40 years of tornado history and over 100 years of hurricane history. Zone IV, the darkest area on the map, has experienced both the greatest number of tornadoes and the strongest tornadoes. As shown by the map key, wind speeds in Zone IV can be as high as 250 MPH. Iredell Rowan Regional planning area is in Zone III on Figure 5- 36.

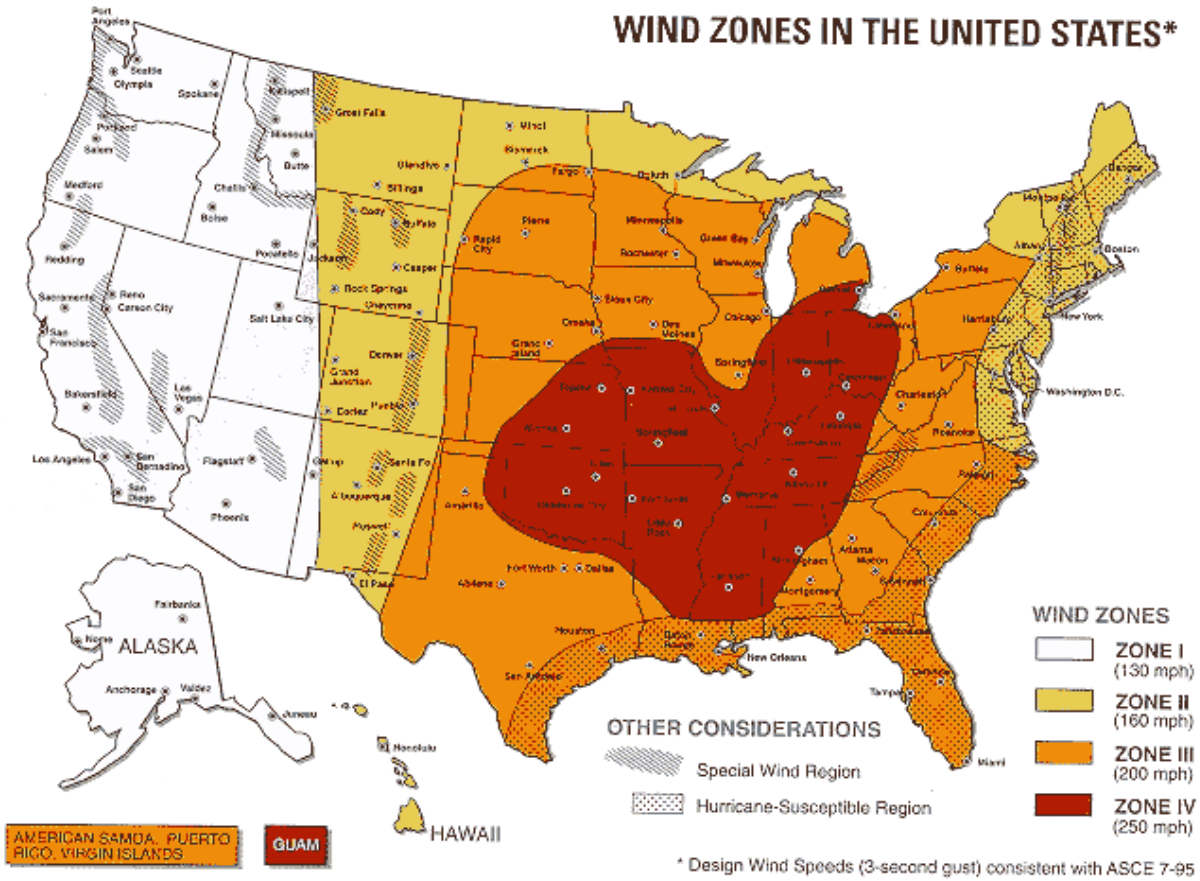


Figure 5- 36: Wind Zones in the US[34]

[34] Storm shelters. (n.d.). Tornado Project Online. Retrieved December 18, 2024, from https://www.tornadoproject.com/safety/shelters.htm

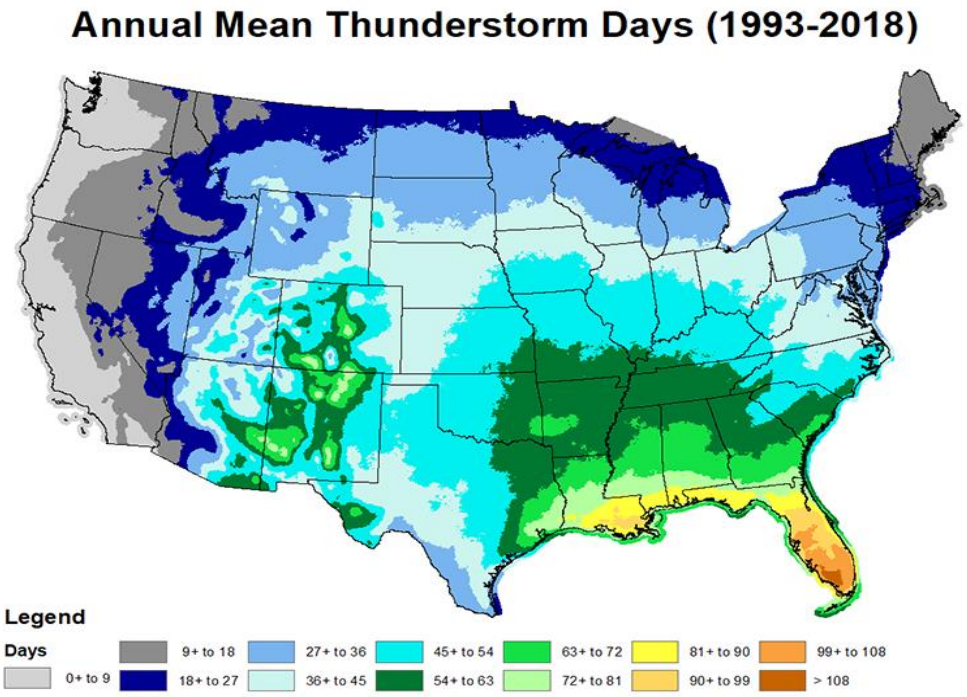


Figure 5- 37: Annual Mean Thunderstorm Days from NOAA

Figure 5- 37 illustrates the annual mean thunderstorm days based on recorded thunderstorm data between 1993-2018. Figure 5- 38, Figure 5- 39, and Figure 5- 40 show the locations for recorded thunderstorm and lightning events with the data ranging from 2000 – 2023. Per the NWS instruction 10-1605, a lightning event is defined as a sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage, so each point represented on map for event type “lightning” record's exact location of lightning strike/strikes that result in a fatality, injury, and/or damage. The same manual defines thunderstorm winds as winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage. National Severe Weather Data was downloaded from NOAAs NCEI and the data collected is from 1955-2022, represented in Figure 5- 40, Figure 5- 38, and Figure 5- 39.

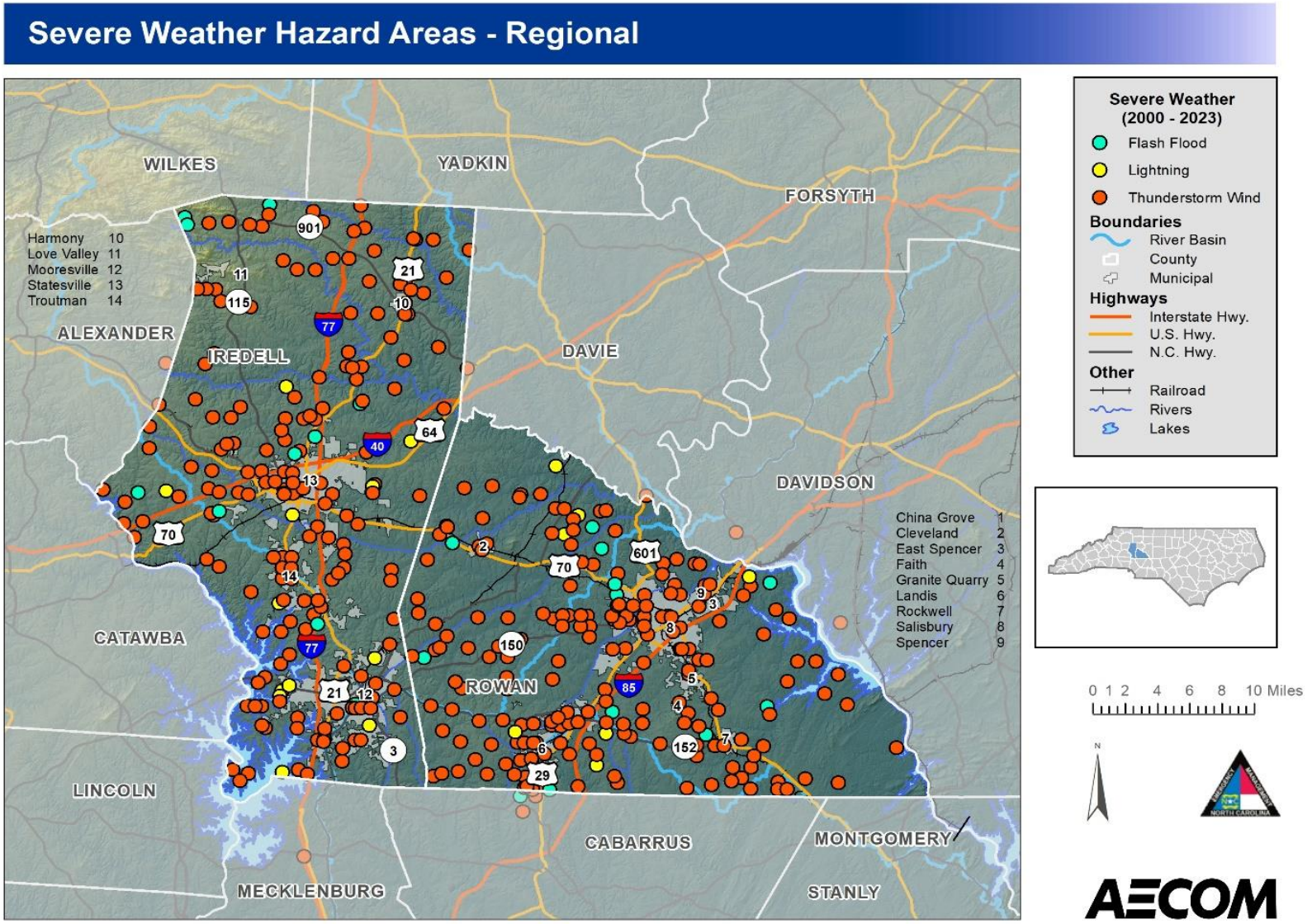


Figure 5- 38: Severe thunderstorm occurrences in the planning area from 2000 to 2023

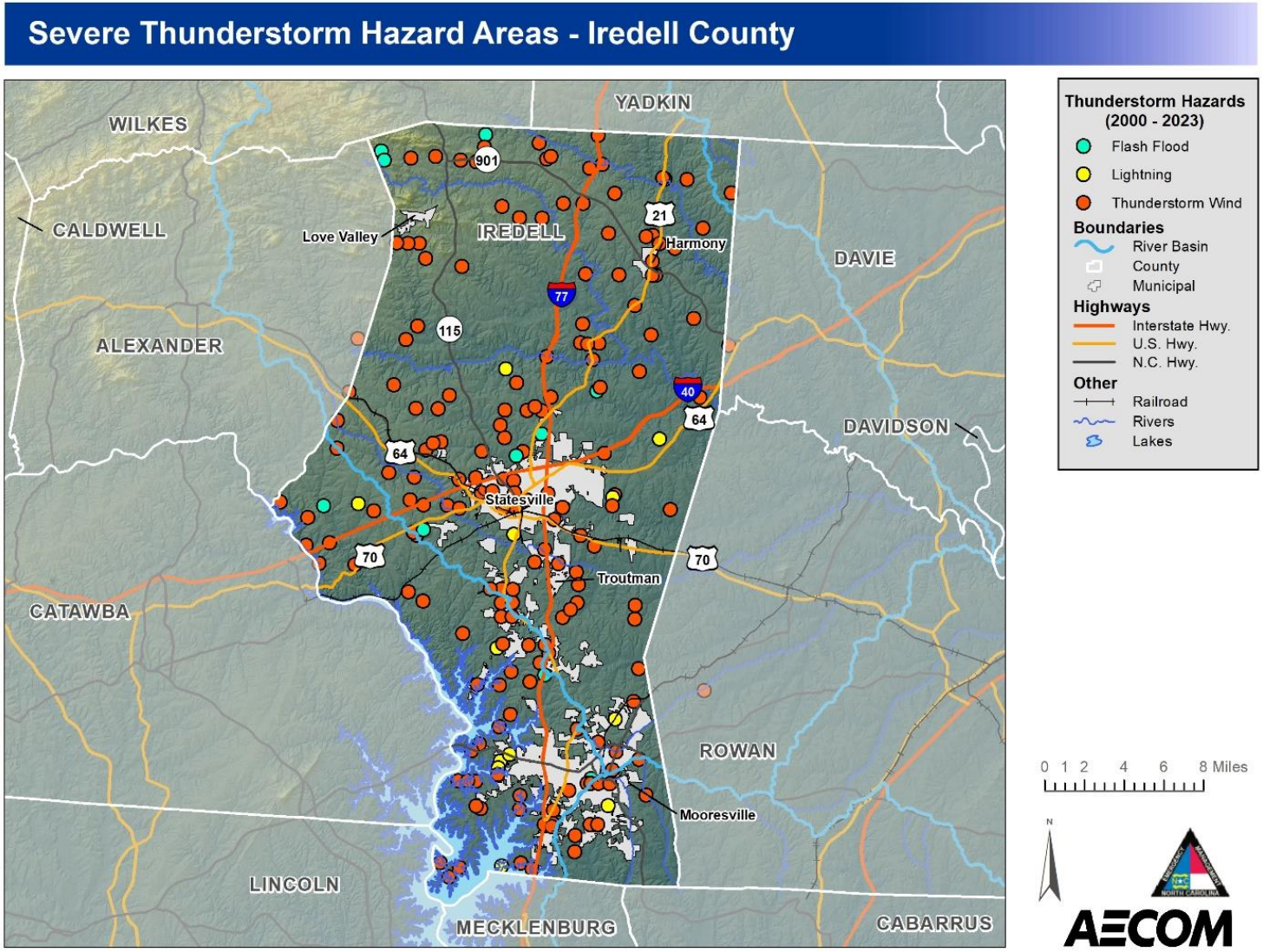


Figure 5- 39 Severe thunderstorm occurrences in Iredell County from 2000-2023.

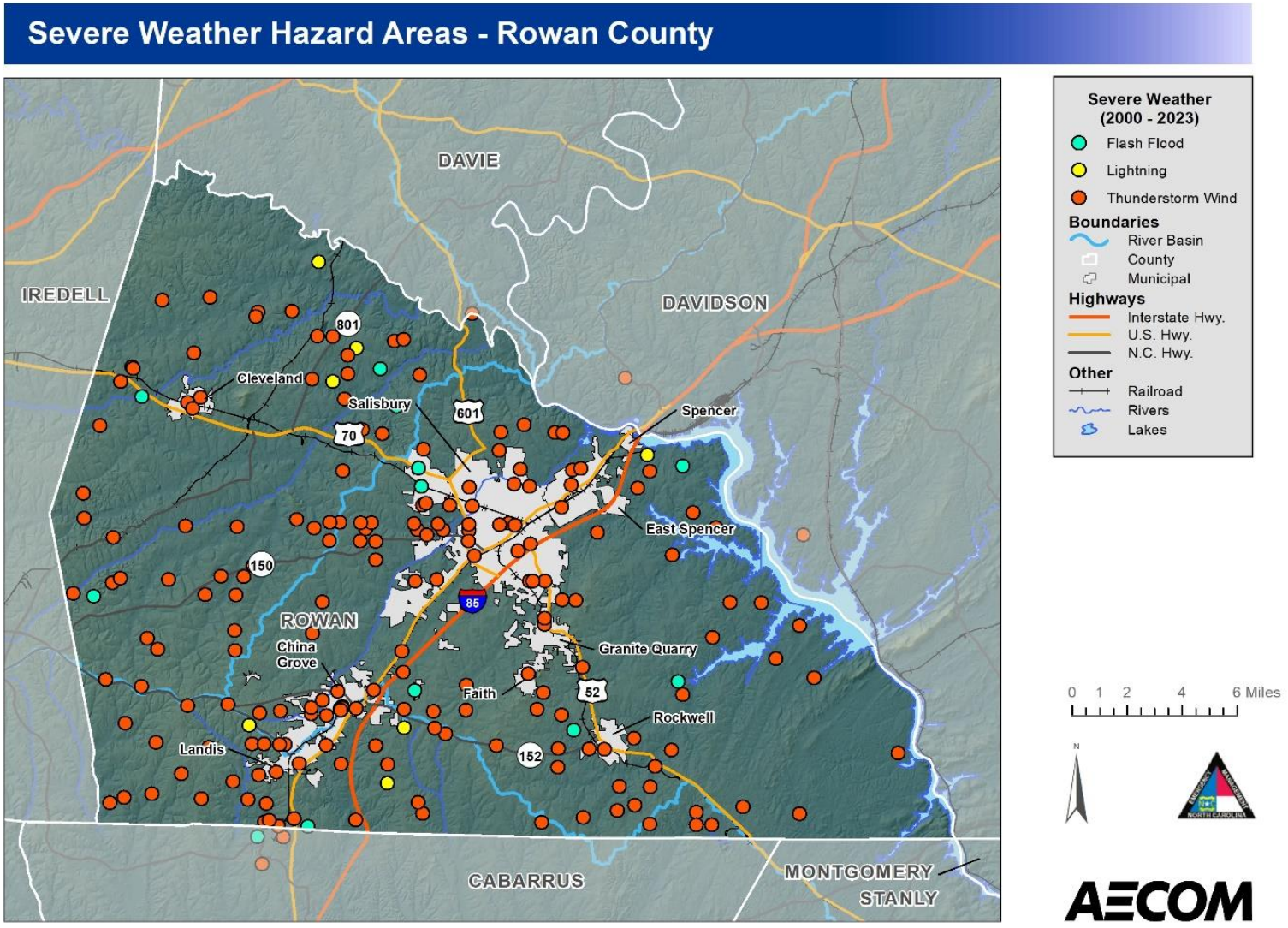


Figure 5- 40: Severe thunderstorm occurrences in Rowan County from 2000-2023

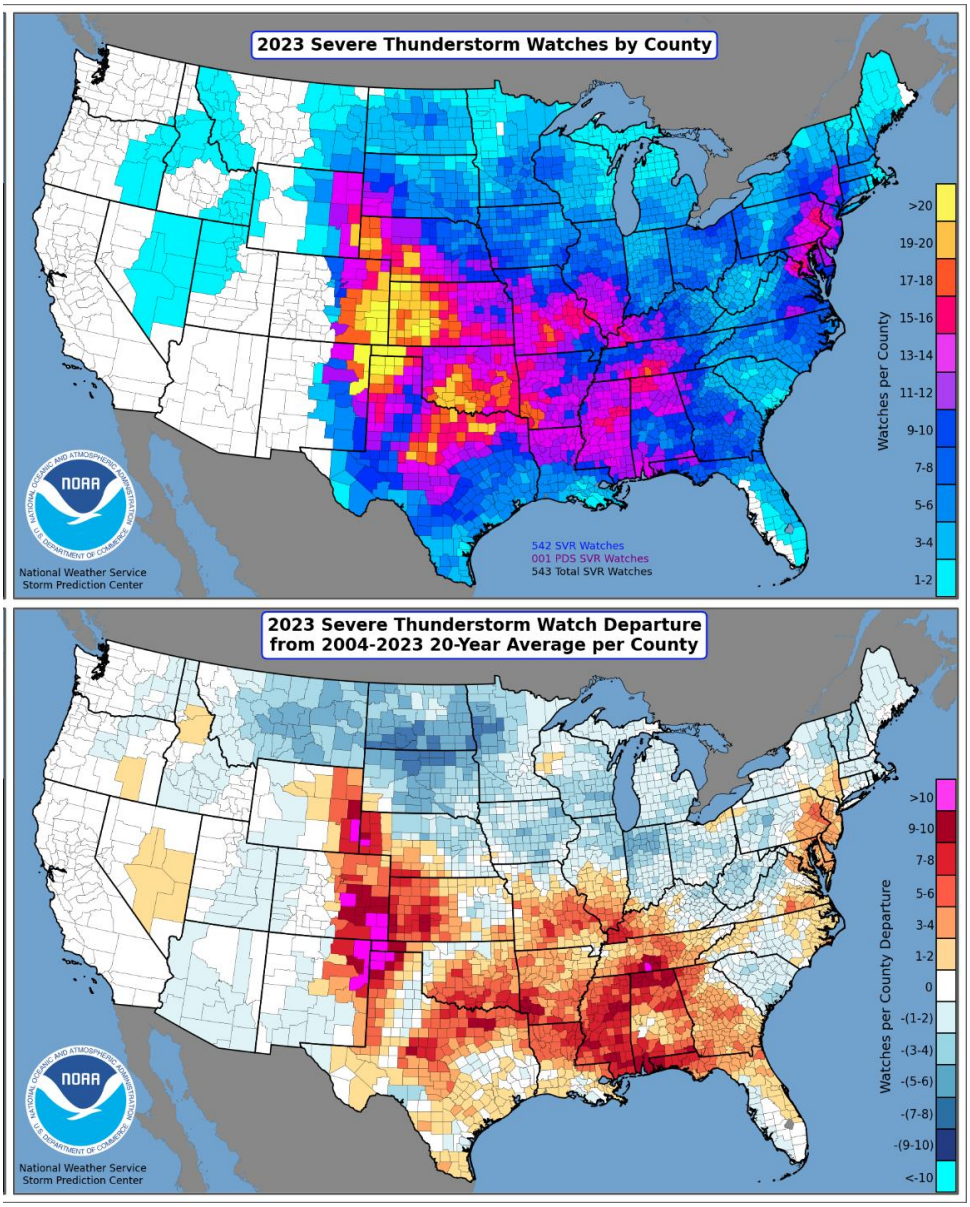


Figure 5- 41: 2023 severe thunderstorm watches and 2004-2023 severe thunderstorm watch departure based on a 20-year average by county[35]

[35] National Oceanic and Atmospheric Administration, National Weather Service, & National Center for Environmental Prediction. (2024, January 17). Severe Weather Maps, Graphics, and Data Page. NOAAs National Weather Service Storm Prediction Center. Retrieved June 11, 2024, from https://www.spc.noaa.gov/wcm/

5.10.3. Extent

Thunderstorm extent is defined by the number of thunder events and wind speeds reported. According to a 69-year history from the NCDC, the strongest recorded wind event in the Iredell Rowan Region was reported on June 22, 1976, at 84 knots (approximately 97 mph). It should be noted that future events may exceed these historical occurrences. Per the National Weather Service Instruction 10-1605, a lightning event is defined as a sudden electrical discharge from a thunderstorm, resulting in a fatality, injury, and/or damage, so each point represented on (Figure 5- 38) for event type “lightning” record’s exact location of lightning strike/strikes that result in a fatality, injury, and/or damage. The same manual defines thunderstorm winds as winds arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots (58 mph), or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury, or damage.

5.10.4. Historical Occurrences

The following historical occurrences have been identified based on the NCEI Storm Events database between 2018 and 2023:

Table 5- 29: Summary of thunderstorm wind events from the NCEI Storm Events database between 2018 and 2023.

Year	Iredell Events	Rowan Events	Average magnitude (Wind Speed)	Property damage total	Injuries	Deaths
2018	8	15	50.22	$235,000	0	0
2019	16	6	49.32	$85,000	1	0
2020	9	9	48.89	$295,000	0	1
2021	6	7	50.38	$130,000	0	0
2022	9	13	48.64	$385,000	0	0
2023	8	12	49.75	$330,000	0	0

5.10.5. Probability of Future Occurrences

Strong Wind Hazards are the defined by the NRI as damaging winds that often originate from thunderstorms that are above 58 mph, and the period of record that the NRI utilizes for strong wind risk data is from 1986 to 2021. The NRI reports that Iredell County will experience 2.5 strong wind events annually, have $1,600,000 of damages from strong wind, and are at a relatively high risk of strong wind impacts. The NRI also reports that Rowan County will experience 2.4 strong wind events per year which will cause approximately $744,000 of damages, and the county is at a relatively moderate risk of impacts from strong wind events. For more information about the census tract level NRI strong wind risk data, see Appendix K.

Because lightning, hail, and tornado are included as separate hazard categories, strong wind events will be included to supplement the other hazard information included in other sections of this plan.

Table 5- 30: NRI Risk Values for Strong Wind in Iredell and Rowan Counties

NRI		Iredell	Rowan
EAL	Rating	Relatively High	Relatively Moderate
	Value	$1,600,000	$744,000
	Frequency	2.5 Events Per Year	2.4 Events Per Year
Risk Index	Rating	Relatively High	Relatively Moderate
	Score	89.4	79.6

Table 5- 31: NRI strong wind data for jurisdictions in the planning area based on census tracts in each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$196,515.59	68.93	Relatively High	80.42	Very High	2.48
Harmony	$70,439.62	80.52	Very High	78.74	Relatively High	2.47
Love Valley	$11,331.62	50.25	Relatively Moderate	80.01	Very High	2.47
Mooresville	$472,670.63	74.43	Relatively High	63.90	Relatively High	2.36
Statesville	$598,527.26	75.13	Relatively High	71.81	Relatively High	2.41
Troutman	$100,696.38	73.42	Relatively High	62.58	Relatively High	2.31
Rowan County *(Unincorporated Area)*	$33,290.41	70.80	Relatively High	61.72	Relatively High	2.35
China Grove	$127,518.37	81.45	Very High	78.81	Relatively High	2.47
Cleveland	$70,001.44	74.49	Relatively High	79.16	Relatively High	2.47
East Spencer	$81,876.82	71.19	Relatively High	76.93	Relatively High	2.50
Faith	$112,592.57	80.49	Very High	80.88	Very High	2.52
Granite Quarry	$138,365.18	79.00	Relatively High	80.79	Very High	2.52
Landis	$116,164.47	79.34	Relatively High	79.78	Relatively High	2.47
Rockwell	$26,652.01	74.86	Relatively High	77.18	Relatively High	2.52
Salisbury	$506,254.38	77.75	Relatively High	79.95	Relatively High	2.51
Spencer	$191,770.42	75.62	Relatively High	78.53	Relatively High	2.51

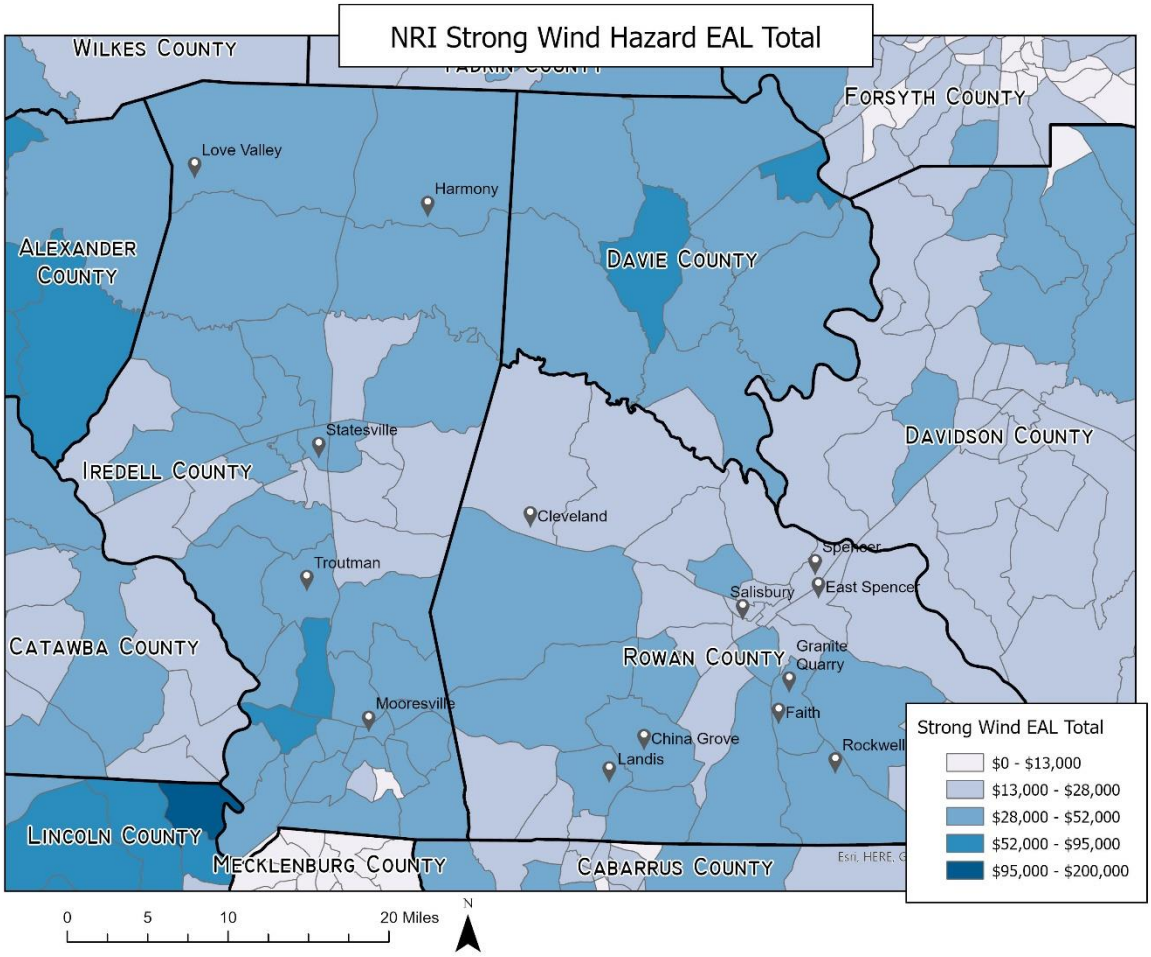


Figure 5- 42: NRI Strong Wind EAL Total

5.10.6. Severe Thunderstorm Hazard Vulnerability and Impact

Severe thunderstorms pose several threats to communities at risk to people, infrastructure, natural resources, historic resources, emergency services, and property. For more information about the buildings, people, and high loss buildings at risk of severe thunderstorm impacts, please visit Appendix D.

5.10.7. Future Vulnerability: Problem Statements

People

Thunderstorms and thunderstorm winds can cause severe injury or death, fires, and are often accompanied by tornadoes, intense winds, thunderstorms, hail, and flash flooding. This can also lead to disruptions in utilities, reduced communication ability, and increased emergency response time. Some housing units in the planning area may be more susceptible to damage caused by lighting or accompanying natural hazards, and in Iredell County and Rowan County 12.8% and 10.7%, respectively, of housing units are RVs, Mobile Homes, Vans, or similar. This

creates a significant vulnerability during natural hazard events and these homes may be more easily damaged. It is critical that individuals who live in these housing units are aware of impending severe storm damage.

Special considerations should be made for those who may have limited mobility such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the sizable portion of residents who may need extra assistance or support in the event of severe weather, it is important that each jurisdiction in the planning area consider special precautions in the event of emergencies.

The ability to prepare for severe storms may be reduced if a household lacks telephone service, internet access, or access to a computer. Limited telephone service reduces the ability to receive reverse 911 emergency alerts, and not having internet access or not having a computer may reduce residents' ability to prepare for and learn about how to prepare for severe thunderstorms and lightning. In Iredell County, only 0.9% of housing units lack telephone service, while in Rowan County, this figure is slightly lower at 0.8%. When it comes to internet access: 9.4% of households in Iredell County and 14.7% in Rowan County report not having internet access. Additionally, 6.5% of households in Iredell County and 10% in Rowan County do not have access to a computer.

To reduce vulnerability in the planning area from thunderstorms or thunderstorm wind impacts, the planning area should consider the following actions:

- Work with utilities providers to expand internet and telephone service area in areas with housing units that have limited or no access to telephone signals. This will help ensure that individuals will receive information about hazardous conditions promptly.
- Evaluate and expand emergency response resources and capabilities to account for population growth which includes creating additional shelters, increasing emergency response capabilities, and increasing the number of trained personnel to respond in the event of a natural hazard event such as lightning.

Changes in Development or Housing Characteristics

The increased growth in the planning area should not impact thunderstorm risk throughout the planning area. Although increases in the amount of development in the planning area could mean that more structures will be at risk of severe storm risks in the future.

Economy

Economic damage to the planning area could include financial strain from property damage, damage to critical infrastructure, damage to critical facilities, disruption of utilities which may interrupt business operations, and potential injury to those in the areas impacted.

Natural Environment

Thunderstorms can impact the natural environment in the planning area by injuring or killing wildlife, knocking down trees, starting fires from lightning, and damaging habitat area.

Additionally, lightning strikes often associated with thunderstorms can start wildfires which significantly impact the natural environment by destroying ecosystems, contributing to habitat fragmentation, killing animals and plants, and reducing air quality. Flooding associated with thunderstorms may also impact the natural environment in the planning area by disrupting aquatic ecosystems due to various secondary impacts such as increased turbidity, reduced oxygen levels, and introduction of potentially harmful chemicals from runoff.

First Responders

There are multiple ways that thunderstorms can impact the ability of first responders to assist in the event of emergencies occurring because of thunderstorm impacts or during thunderstorms. Thunderstorms can impact or reduce the ability of first responders to communicate, coordinate, and travel. This would result from damaged critical infrastructure, power outages, debris blocking roads, flooding, potential damage to emergency response equipment, and damage to critical facilities. All these potential impacts may reduce the ability of first responders to respond to emergencies in a timely manner.

Thunderstorms may significantly impact the elderly or disabled residents in the planning area, and as a result special considerations should be made for residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. As a result of the sizable portion of residents who may need extra assistance or support in the event of severe weather, it is important that each jurisdiction in the planning area considers special precautions in the event of emergencies. As a result, the planning area should consider the following mitigation actions:

- Maintaining a special needs registry to ensure that individuals with disabilities or who need assistance can access emergency response services in the event of a severe thunderstorm.
- Encourage residents who require assistance to develop an action plan so that in the event of an emergency, such as a fire started by lightning, they can receive immediate assistance if emergency services are limited or delayed.
- Review emergency response procedures regularly to update responsibilities, areas of risk, and protocol for thunderstorm or severe weather events.
- Implement and maintain advanced severe weather or thunderstorm warning systems that utilize real-time data to alert communities of impending severe weather.

Continuity of Operations

Thunderstorms may cause fires, loss of power, flooding, downed trees, damage to roads causing reduced travel capabilities, and the reduced ability to communicate. As a result, there may be impacts to day-to-day operations after thunderstorm events. The planning area should consider scheduling regular reviews of the continuity of operations plans to better prepare for lightning events which include reevaluating responsibilities for recovery and immediate response.

Climate Change

The NCCSR also suggests severe thunderstorms will increase due to climate change throughout the State. Global climate models consistently project an increase in the frequency of severe thunderstorm events across the United States over the mid-to late 21st century. Based on the increased frequency of extremely high, increases in storm intensity are also projected for the planning area over this same period.

5.11. Tornado

5.11.1. Background

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 miles per hour to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and can cause extreme destruction and turn normally harmless objects into deadly missiles. Each year, an average of over 1,000 tornadoes is reported nationwide, resulting in an average of 80 deaths and 1,500 injuries[36]. According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas, and Florida, respectively. Although the Great Plains region of the Central United States does favor the development of the largest and most dangerous tornadoes (earning the designation of “tornado alley”), Florida experiences the greatest number of tornadoes per square mile of all U.S. states (SPC, 2002). Figure 5- 43 shows the risk of tornados across the US based on NRI risk rating data.

[36] NOAA’s National Weather Service. (n.d.-e). Tornadoes FAQ. https://www.weather.gov/lmk/tornadoesfaq#:~:text=In%20an%20average%20year%2C%20about,deaths%20and%20over%201%2C500%20injuries.

Tornadoes are more likely to occur during the months of March through May and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly, but even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long. The destruction caused by tornadoes ranges from light to inconceivable depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction, including residential dwellings (particularly mobile homes). Tornadic magnitude is reported according to Fujita and Enhanced Fujita Scales. Tornado magnitudes prior to 2005 were determined using the traditional version of the Fujita Scale (Table 5- 17). Tornado magnitudes were determined in 2005 and later were determined using the Enhanced Fujita Scale (Figure 5- 40).

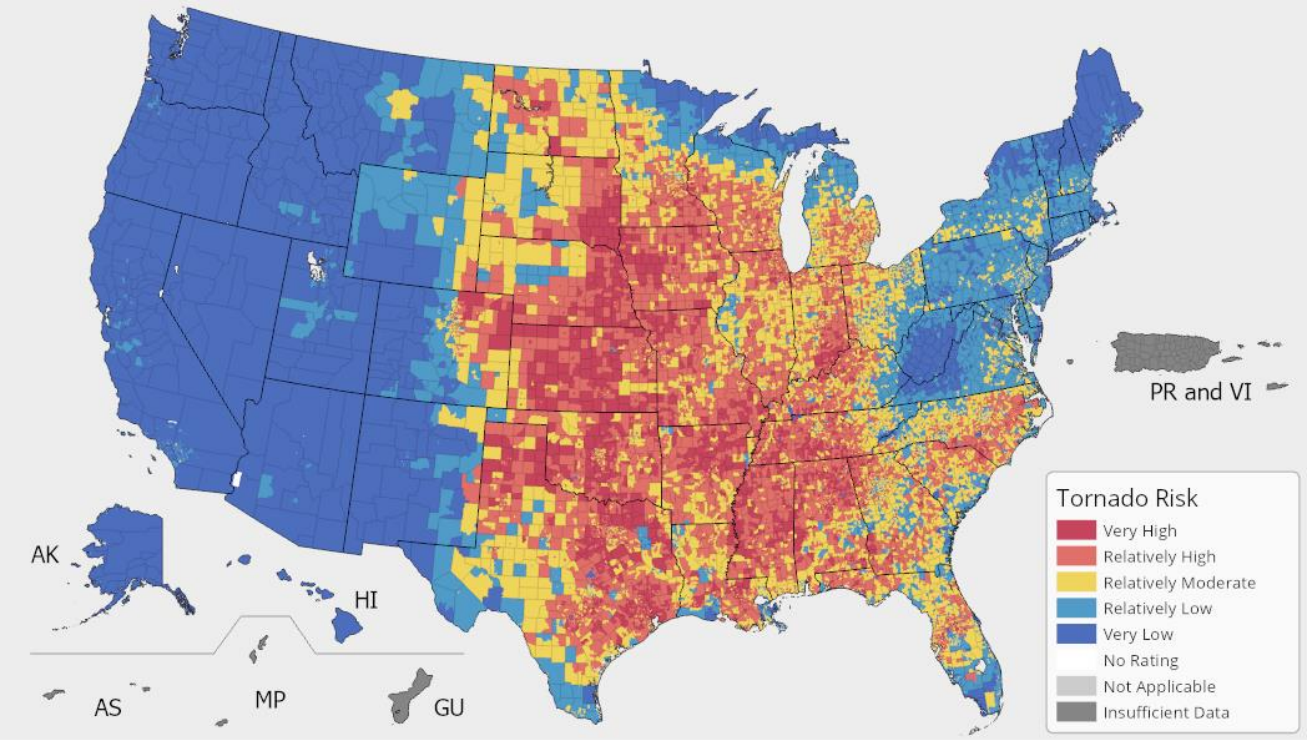


Figure 5- 43: Tornado risk rating from the NRI for the US

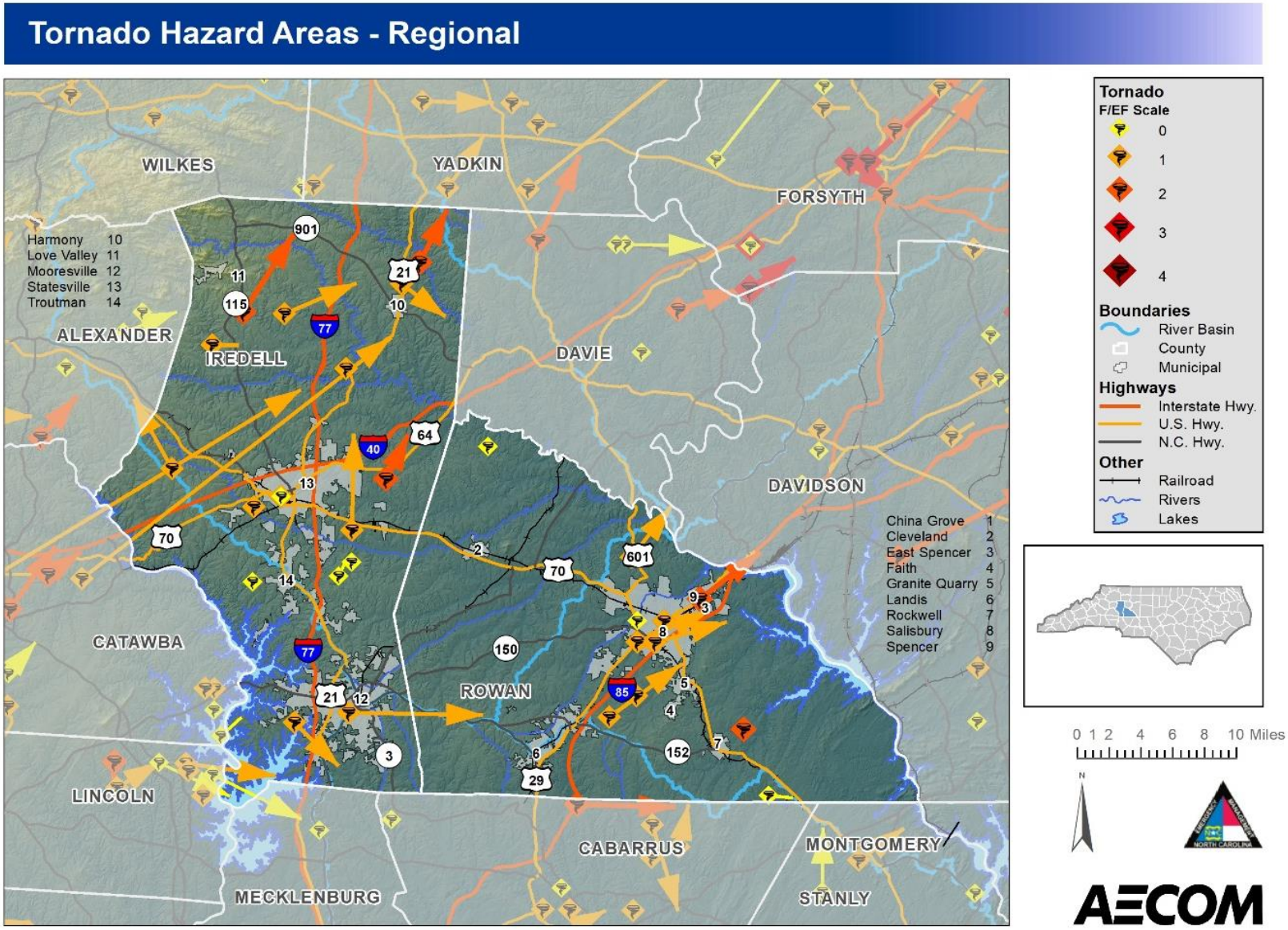


Figure 5- 44: Tornado Hazard Areas and paths in the planning area

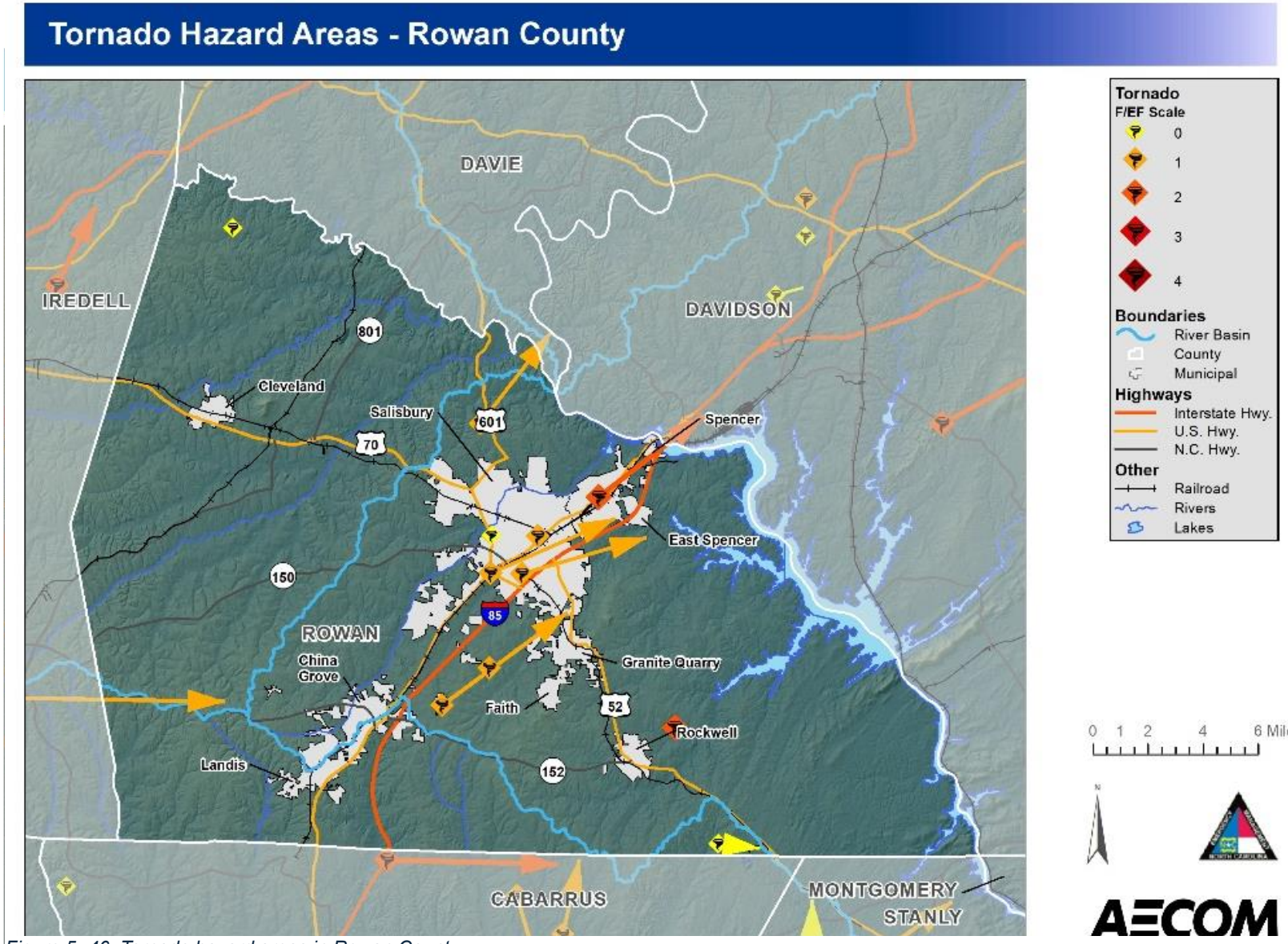


Figure 5- 46: Tornado hazard areas in Rowan County

Figure 5- 45: Tornado hazard areas in Iredell County

National Severe Weather Data was downloaded from NOAAs NCEI was used in Figure 5- 43, Figure 5- 44, and Figure 5- 45 to represent points of tornado touchdown and tornado tracks. The events are varied in color based on Enhanced Fujita (EF) scale and the period of the data collection is between 1955 and 2022.

Table 5- 32: Fujita scale for Tornados

F Scale	Winds	Expected Damage
F0	<73 mph	Light Damage
F1	73-112 mph	Moderate Damage
F2	113-157 mph	Considerable Damage
F3	158-206 mph	Severe Damage
F4	207-260 mph	Devastating Damage
F5	261-318 mph	Incredible Damage

Table 5- 33: Enhanced Fujita Scale for Tornados[37]

EF Scale	3-Second Gusts	Type of Damage
0	65-85 mph	Minimal damage
1	86-110 mph	Moderate Damage
2	111-135 mph	Major Damage
3	136-165 mph	Severe Damage
4	166-200 mph	Devastating Damage
5	Over 200 mph	Incredible Damage

5.11.2. Location

Tornadoes occur throughout North Carolina, and thus in the Iredell Rowan Region. Tornadoes typically impact a small area, but damage may be extensive. Event locations are completely random, and it is not possible to predict specific areas that are more susceptible to tornado strikes over time. Therefore, it is assumed that the Iredell Rowan Region is uniformly exposed to this hazard. The figures below illustrate the paths of previous tornadoes in the Region.

5.11.3. Extent

Tornado hazard extent is measured by tornado occurrences in the US provided by the NCDC and the Fujita/Enhanced Fujita Scale. The following table provides the highest recorded events in the jurisdictions (except Harmony, Love Valley, Troutman, China Grove, Cleveland, East Spencer, Faith, Granite Falls, Landis, Rockwell, and Spencer, which have not experienced tornadoes in their jurisdictions) in the Region below:

Table 5- 34: Most recent tornados in the planning area

Location	Date	Magnitude
Iredell County (Unincorporated Area)	07/07/05	F2
Iredell County (Unincorporated Area)	05/24/17	EF2

[37] NOAA's National Weather Service. (n.d.-d). The enhanced Fujita Scale (EF scale). https://www.weather.gov/oun/efscale

Location	Date	Magnitude
Town of Mooresville	05/29/96	F1
City of Statesville	01/29/57	F1
City of Statesville	08/28/88	F1
Rowan County (Unincorporated Area)	01/14/05	F2
Rowan County (Unincorporated Area)	03/28/10	EF2
City of Salisbury	04/27/65	F1
City of Salisbury	01/08/78	F1
City of Salisbury	05/29/96	F1
Town of Spencer	03/28/10	EF1

The largest impact of tornadoes is the economic damage caused by widespread destruction along their paths. More directly, there are many people killed by these storms, and to a lesser extent pets and farm animals. The major damage is the complete destruction of homes, buildings, and farms, the wrecking of cars and trucks, and the loss of power distribution systems. Winds as high as 300 mph blow down walls, tear up trees, and throw debris in every direction at high speeds. Indirect losses include workers who cannot report to jobs and commercial entities that are most close to repairing damages. The rate of onset of tornado events is rapid, giving those in danger minimal time to seek shelter. The current average lead time according to NOAA is 13 minutes. Injury may result from the direct impact of a tornado, or it may occur afterward when people walk among debris and enter damaged buildings. A study of injuries after a tornado in Marion, Illinois, showed that 50 percent of all tornado-related injuries were suffered during rescue attempts, cleanup, and other post-tornado activities. Common causes of injury included falling objects and heavy, rolling objects. Because tornadoes often damage power lines, gas lines, or electrical systems, there is a risk of fire, electrocution, or an explosion.

5.11.4. Historical Occurrences

It should be noted that only those historical occurrences listed in the NCEI Storm Events Database are shown here and that other, unrecorded, or unreported events may have occurred within the planning area during this timeframe.

*Table 5- 35: Tornados reported by the NCEI Storm Events Database in Iredell and Rowan County from May 2017 to January 2024. * indicates a weather event area that is within the planning area that is not considered a town or a city.*

Date	Location	County	Magnitude	Damage	Event Narrative
5/24/2017	Shinnville*	Iredell	EF0	$10,000	Scattered thunderstorms developed before a cold front across western North Carolina in the afternoon. Multiple severe storms produced isolated tornadoes, with a couple of strong tornadoes impacting northwest Piedmont. Sporadic wind damage occurred across the remainder of the area.
	Elmwood*		EF2	$250,000	
2/6/2020	Gold Hill*	Rowan	EF0	0	NWS storm survey found a weak tornado damage path that began near the intersection of Old Beatty Ford Rd and St Stephens Church Rd south of Gold Hill. A small barn was damaged at this location, which was the most considerable damage along the track. Some trees were

Date	Location	County	Magnitude	Damage	Event Narrative
					snapped and uprooted here as well. The tornado snapped and uprooted trees as it moved east along and near Old Beatty Ford Rd before ending near Old Highway 80.
8/17/2021	Scotts*	Iredell	EF1	$10,000	Tropical Storm Fred made landfall in the Florida Panhandle on the 16th and lifted steadily north through Georgia and into the southern Appalachians during the 16th and throughout the 17th. Tropical moisture and strong southeast upslope flow into the Blue Ridge mountains resulted in widespread showers and some thunderstorms producing extremely heavy rainfall rates. By the time the rain tapered off by the end of the 17th, 24-hour rainfall amounts of 5-12 inches were reported across portions of the mountains and foothills. This was in addition to a small area of 5–10-inch amounts that fell across portions of the southern North Carolina mountains during the morning of the 16th. The result of this rainfall was significant to catastrophic flash flooding across portions of the French Broad and Pigeon River basins, including some of the worst flooding to impact these areas in almost 20 years. The most severe flooding occurred in parts of southern and central Haywood County, where hundreds of millions of dollars and damage occurred. In addition, a brief tornado touched down in Iredell County and tracked into Alexander County.
5/26/2022	Statesville Ryne Ar*	Iredell	EF2	$30,000	A broad band of moderate to heavy rain showers with embedded strong to severe thunderstorms moved over western North Carolina throughout the afternoon into the evening. Several strong to severe thunderstorms produced locally damaging wind gusts, brief large hail, and even a couple of tornadoes, including a strong tornado in Iredell County. One direct injury was reported.
4/22/2023	MT Mourne*	Iredell	EF0	$10,000	A line of heavy rain showers and embedded thunderstorms swept across western North Carolina during the morning. A couple embedded strong-to-severe storms produced brief periods of hail and damaging wind gusts in Piedmont.
8/7/2023	Mooresville Airport*	Iredell	EF1	$50,000	Numerous thunderstorms and storm clusters moved across western North Carolina throughout the afternoon. Many of these storms produced severe weather, damaging wind gusts, some of which were long-lived. A couple of weak tornadoes also developed in Piedmont, including a long-track EF1.
	Mt Ulla*	Rowan	EF1	$50,000	
1/9/2024	Buffalo*	Iredell	Ef1	0	A major/complex frontal system brought widespread rain with embedded thunderstorms to western North Carolina, during the afternoon of the 9th. Widespread rainfall of 3 to 5 inches (with locally higher amounts) in around 12 hours resulted in many flooding reports. Isolated severe thunderstorms also resulted in several damaging wind gusts reports over Piedmont, along with an

Date	Location	County	Magnitude	Damage	Event Narrative
					EF1 tornado impacting parts of Catawba and Iredell Counties.

5.11.5. Probability of Future Occurrences

The NRI determines tornado impact data based on tornado records from 1950 to 2021. The NRI reports that the planning area is at a relatively moderate risk of tornado impacts and is expected to experience 0.2 events per year, or 1 event every 5 years. Iredell County is expected to experience $5,900,000 of annual loss and Rowan County is expected to experience $4,700,000 of annual loss related to tornados. For more information about census tract level NRI data for tornados, see Appendix K.

Table 5- 36: NRI Risk Values for Tornados in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Moderate	Relatively Moderate
	Value	$5,900,000	$4,700,000
	Frequency	0.2 Events Per Year	0.2
Risk Index	Rating	Relatively Moderate	Relatively Moderate
	Score	88.1	88.2

Table 5- 37: NRI tornado data based on each jurisdiction in the planning area and each census tract within jurisdictions

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$537,415.20	57.29	Relatively Moderate	62.25	Relatively High	0.0047
Harmony	$282,761.33	72.39	Relatively High	64.26	Relatively High	0.00128
Love Valley	$157,081.09	75.63	Relatively High	63.59	Relatively High	0.0014
Mooresville	$2,755,313.36	72.68	Relatively High	63.44	Relatively High	0.0091
Statesville	$3,002,561.72	71.12	Relatively High	64.63	Relatively High	0.002395
Troutman	$664,924.92	75.92	Relatively High	64.51	Relatively High	0.009823
Rowan County *(Unincorporated Area)*	$334,560.21	76.48	Relatively High	66.18	Relatively High	0.001123
China Grove	$544,531.46	70.63	Relatively High	64.48	Relatively High	0.004597
Cleveland	$279,163.02	66.04	Relatively High	63.86	Relatively High	0.008063
East Spencer	$436,332.12	65.14	Relatively High	60.27	Relatively High	0.002739

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Faith	$177,803.54	59.65	Relatively Moderate	58.32	Relatively Moderate	0.012194
Granite Quarry	$265,179.83	62.05	Relatively High	58.91	Relatively Moderate	0.009323
Landis	$423,938.91	68.69	Relatively High	62.32	Relatively High	0.005901
Rockwell	$94,310.26	62.34	Relatively High	57.81	Relatively Moderate	0.0105
Salisbury	$1,551,936.65	63.68	Relatively High	58.58	Relatively Moderate	0.0079
Spencer	$785,805.67	68.11	Relatively High	59.29	Relatively Moderate	0.0023

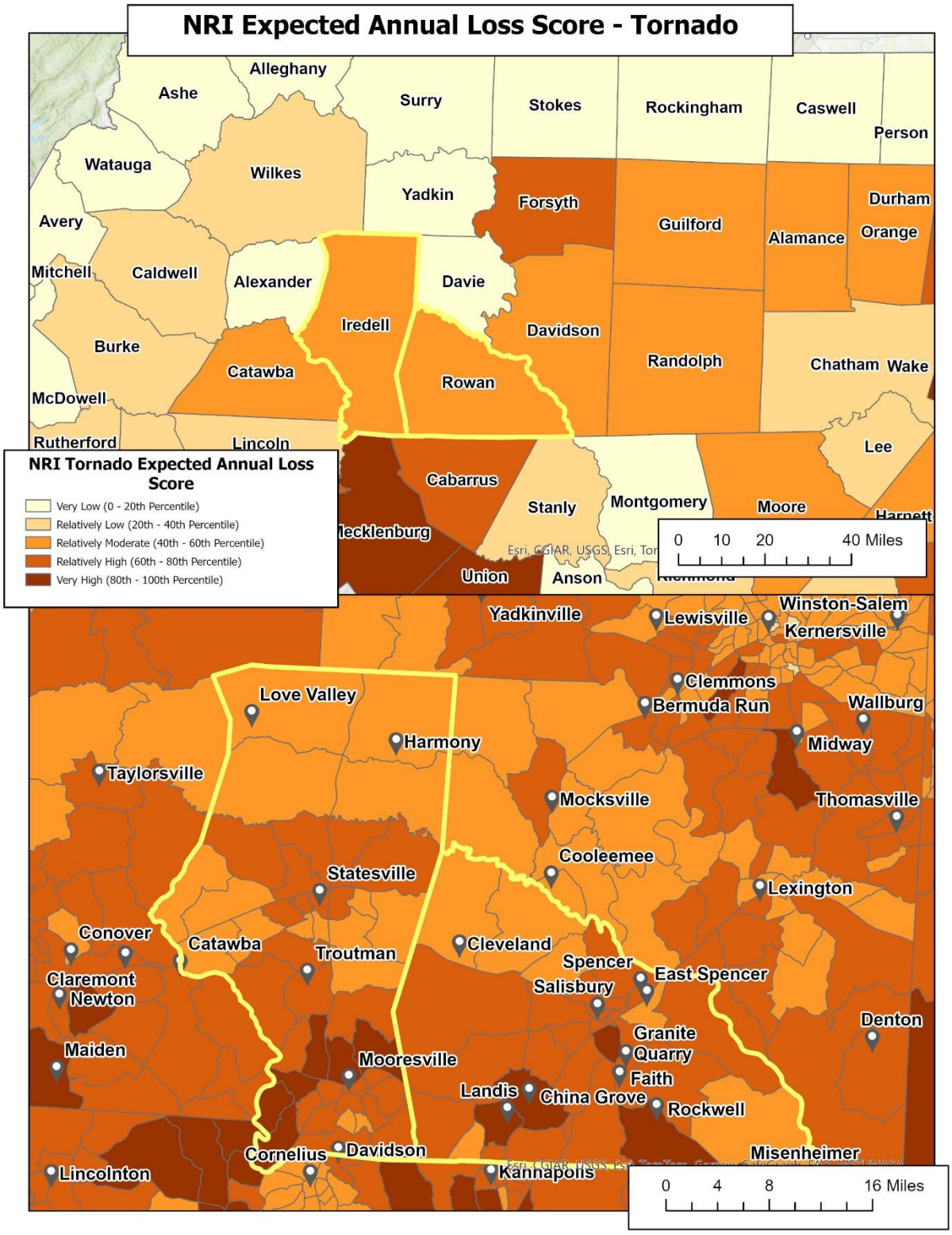


Figure 5- 47: Tornado EAL Score for the planning area by county and census tract

5.11.6. Tornado Hazard Vulnerability and Impact

There is not sufficient data to identify a preferred path that tornados seek in the Region. The jurisdictions of Mooresville and Salisbury will experience more damage, as they are the most densely developed areas of the county; however, all the Region and the jurisdictions in the planning area are vulnerable to the effects of a tornado. All mitigation projects will consider a countywide approach. All the inventoried assets in the Region are exposed to potential tornado activity. Any specific vulnerability of individual assets would depend on individual design, building characteristics, and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk assessment but may be considered during future updates.

The largest impact of tornadoes is the economic damage caused by widespread destruction along their paths. More directly, there are many people killed by these storms, and to a lesser extent pets and farm animals. The major damage is the complete destruction of homes, buildings, and farms, the wrecking of cars and trucks, and the loss of power distribution systems. Winds as high as 300 mph blow down walls, tear up trees, and throw debris in every direction at high speeds. Indirect losses include workers who cannot report to jobs and commercial entities that are closest to repairing damages. The rate of onset of tornado events is rapid, giving those in danger minimal time to seek shelter. The current average lead time according to NOAA is 13 minutes. Injury may result from the direct impact of a tornado, or it may occur afterward when people walk among debris and enter damaged buildings. A study of injuries after a tornado in Marion, Illinois, showed that 50 percent of the tornado-related injuries were suffered during rescue attempts, cleanup, and other post-tornado activities. Common causes of injury included falling objects and heavy, rolling objects. Because tornadoes often damage power lines, gas lines, or electrical systems, there is a risk of fire, electrocution, or an explosion.

For more information about the buildings, people, and high loss buildings at risk of tornado hazard impacts, please see Appendix D.

5.11.7. Future Vulnerability: Problem Statements

People

Tornados often have a rapid onset and a limited period for those impacted to prepare and seek shelter. Tornados can cause severe injury or death to those impacted due to direct impact of a tornado or debris picked up by the tornados. Tornados can cause damage to critical facilities, critical infrastructure, buildings, private property, and power lines. This can create the danger for downed powerlines, create gas leaks, create electrical system malfunctions or failure, leading to increased risk of electrocutions, fire, and explosions.

Without adequate alert, tornados can create disproportionate impacts of specific groups such as those who reside in housing units that are RVs, Mobile Homes, premanufactured homes, or Vans. The proportion of housing units are RVs, Mobile Homes, Vans, or similar are 12.8% in Iredell County and 10.7% in Rowan County.

Iredell and Rowan County may have populations that are disproportionately impacted by tornados due to lack of internet access, access to computers, or lack of telephone service that would allow residents to respond to alerts, prepare for sheltering from tornados by locating the nearest tornado shelter, or learning about how to prepare for tornados. In Iredell County, 9.4% of households report that they do not have access to the internet, 6.5% report that they do not have access to a computer, and 0.9% report that they do not have telephone service in their housing unit. In Rowan County, 14.7% of households report that they do not have access to the internet, 10% report that they do not have access to a computer, and 0.8% report that they do not have telephone service in their housing unit. This creates a significant vulnerability for a natural hazard like tornados because of their rapid onset. As a result, the planning area should consider the following mitigation actions:

- Ensure that communities of vulnerable housing units have designated tornado shelters and are adequately prepared for tornado hazards.
- Conduct regular evaluations of the vulnerable community members, such as underserved population, have equitable access to resources and support.
- Work with telephone and internet service providers to expand telephone service and internet access to reduce the disproportionate vulnerability of those who do not have access to telephone alerts or internet-based alert systems.

Changes in Development or Housing Characteristics

As development increases, there is no increased or decreased risk of tornados associated in the planning area. In rural areas, a tornado may move along a path where no residents or property exists, but as jurisdictions increase in size or concentration of development, tornado activity has a greater change of impacting exposed buildings and populations to hazards. The changes expected in the planning area and projected increase in population demonstrate the potential for rapid growth but also demonstrate that there may be challenges meeting the demand for emergency response and availability of community resources after tornado events and the need for emergency response capabilities to be reassessed routinely. Potential mitigation actions that jurisdictions in the planning area include:

- Enforce minimum design standards required for buildings to be resilient to tornado hazards.
- In areas with high densities of vulnerable housing units consider requiring developments to construct tornado shelters in future development.

Economy

Tornados can cause widespread economic damage because of their damage to property, facilities, and infrastructure located in the tornadoes path. There is potential that tornadoes will cause major damage resulting in loss of homes, businesses, properties, critical facilities, and others due to high wind speeds and debris associated with tornado events.

Natural Environment

The natural environment in the path of the direct impact can be disrupted by tornados and cause damage to habitats, damage to trees and vegetation, and damage to animals in the path of the tornados.

First Responders

First responders may be impacted by tornados through damage from direct impacts to emergency response facilities, injury from direct tornado impact, or injury during the tornado response efforts. The ability for first responders to respond could be significantly impacted if critical facilities and infrastructure are damaged. This could create reduced ability to travel and reduced communication abilities.

Continuity of Operations

Continuity of operations may be significantly impacted by tornados due to damage or destruction of critical facilities, emergency response facilities, and critical infrastructure, which would delay restoration of normal daily operations.

Climate Change

As reported by the North Carolina State Hazard Mitigation Plan, the National Aeronautics and Space Administration (NASA), predicts that tornado events in the future are likely to become more frequent in the southeastern USA because of weather extremes. While the number of annual days of which weather conditions were favorable for tornadoes decreased from 1979 to 2020 across the southern parts of the traditional ‘Tornado Alley’ in the central part of the continental USA, an increase was observed from the Mississippi Valley across much of the Southeast over the same period.

The North Carolina Climate Science Report also suggests that the overall occurrence of tornadoes will increase due to climate change throughout the State. Since the 1970s, the United States has experienced a decrease in the number of days per year on which tornadoes occur but an increase in the number of tornadoes that form on such days. In other words, the frequency of days with large numbers of tornadoes (tornado outbreaks) appears to be increasing, with the result that the total number of tornadoes per year may be increasing.

Hurricanes are in some instances associated with the production of tornadoes. Stronger hurricanes resulting from the effects of climate change would in theory be more prone to produce tornadoes due to a stronger wind field, but there is exceptionally low confidence in this projection due to the limited research results to date.

For more information about buildings, people, and high loss properties at risk of tornado impacts, see Appendix D.

5.12. Winter Storm and Freeze

5.12.1. Background

A winter storm can range from moderate snow over a period of a few hours to blizzard conditions with blinding wind-driven snow that lasts for several days. Events may include snow,

sleet, freezing rain, or a mix of these wintry forms of precipitation. Some winter storms might be large enough to affect several states, while others might affect only localized areas. Occasionally, heavy snow might also cause significant property damage, such as roof collapses on older buildings.

All winter storm events have the potential to present dangerous conditions to the affected area. Larger snowfalls pose a greater risk, reducing visibility due to blowing snow and making driving conditions treacherous. A heavy snow event is defined by the NWS as an accumulation of 4 or more inches in 12 hours or less. A blizzard is the most severe form of winter storm. It combines low temperatures, heavy snow, and winds of 35 miles per hour or more, which reduces visibility to a quarter mile or less for at least 3 hours. Winter storms are often accompanied by sleet, freezing rain, or an ice storm. Such freeze events are particularly hazardous as they create treacherous surfaces.

Ice storms are defined as storms with significant amounts of freezing rain and are a result of frigid air damming (CAD). CAD is a shallow, surface-based layer of cold, stably stratified air entrenched against the eastern slopes of the Appalachian Mountains. With warmer air above, falling precipitation in the form of snow melts, then becomes either super-cooled (liquid below the melting point of water) or re-freezes. In the former case, super-cooled droplets can freeze on impact (freezing rain), while in the latter case, the re-frozen water particles are ice pellets (or sleet). Sleet is defined as partially frozen raindrops or refrozen snowflakes that form into small ice pellets before reaching the ground. They typically bounce when they hit the ground and do not stick to the surface. However, it does accumulate like snow, posing similar problems and has the potential to accumulate into a layer of ice on surfaces. Conversely, freezing rain usually sticks to the ground, creating a sheet of ice on the roadways and other surfaces. All the winter storm elements – snow, low temperatures, sleet, ice, etcetera – have the potential to cause significant hazard to a community. Even small accumulations can down power lines and tree limbs and create hazardous driving conditions. Furthermore, communication and power may be disrupted for days.

FEMAs NRI census tract dataset was downloaded and symbolized using Total Expected Annual Loss to represent the winter storm and freeze EAL in, and Figure 5- 48, Figure 5- 49, and Figure 5- 50, and the period of data collection is from 2005 to 2021.

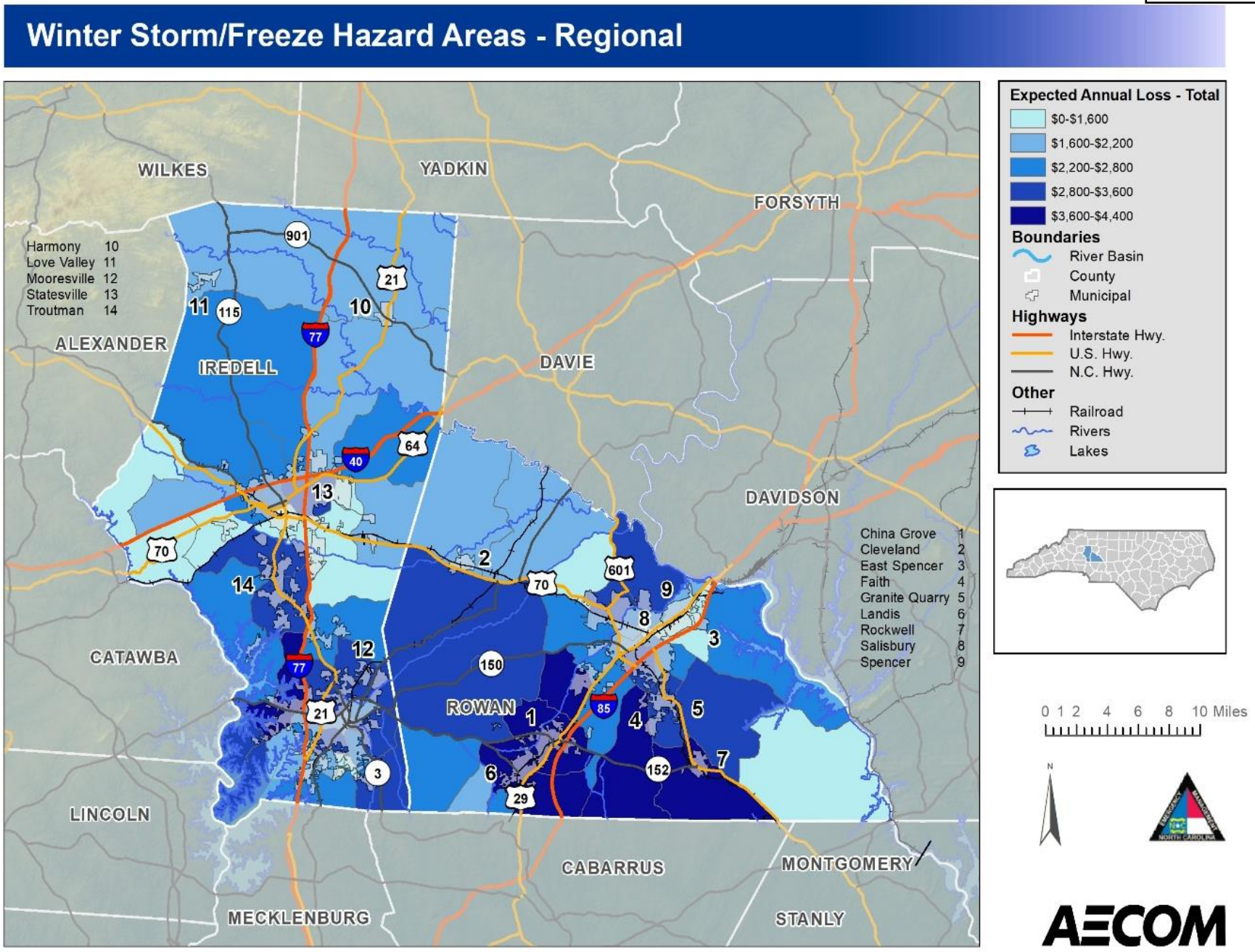


Figure 5- 48: Winter Storm and Freeze Hazard Areas Regional

Winter Storm/Freeze Hazard Areas - Iredell County

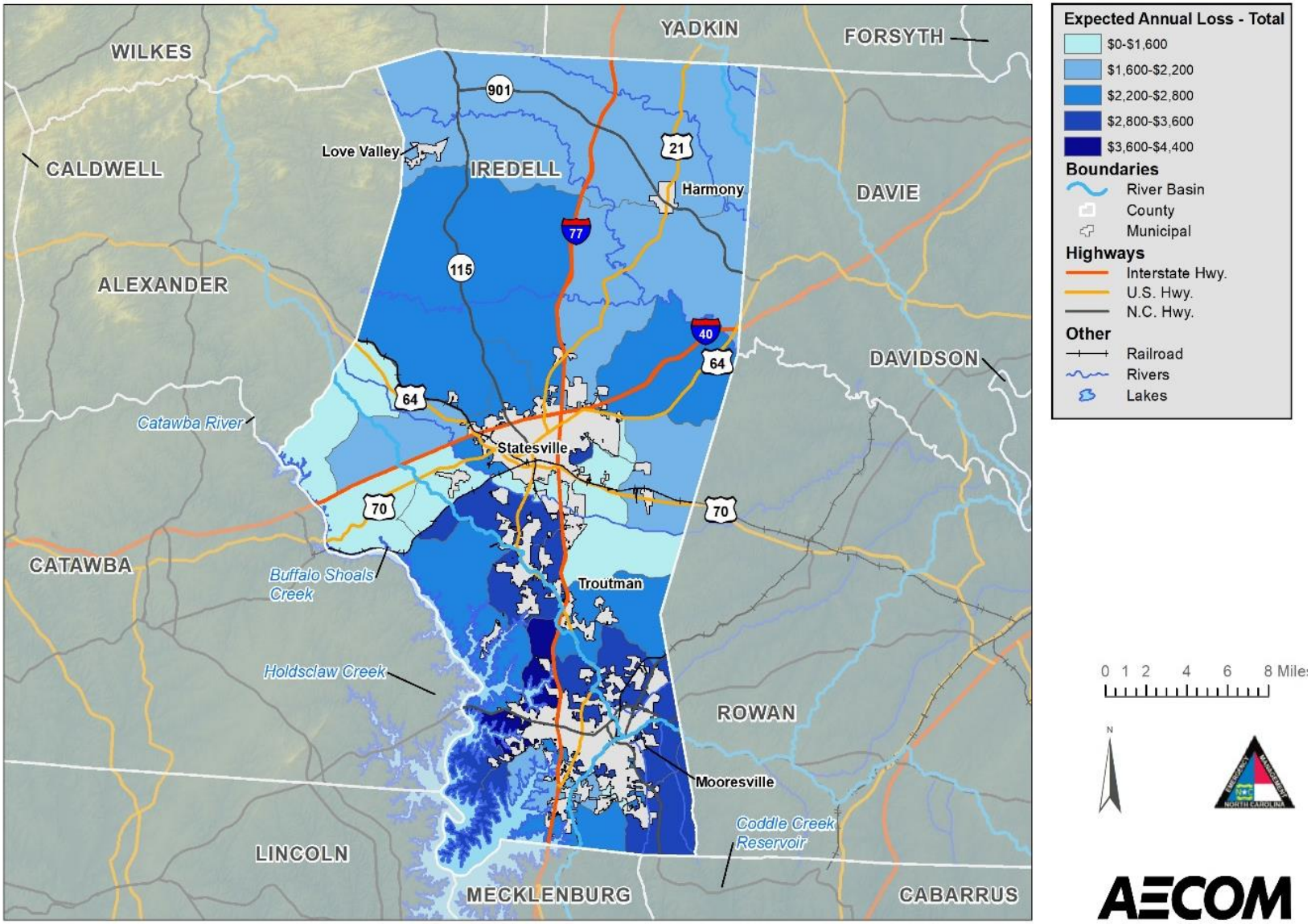


Figure 5- 49: Winter Storm and Freeze Hazard Areas in Iredell County

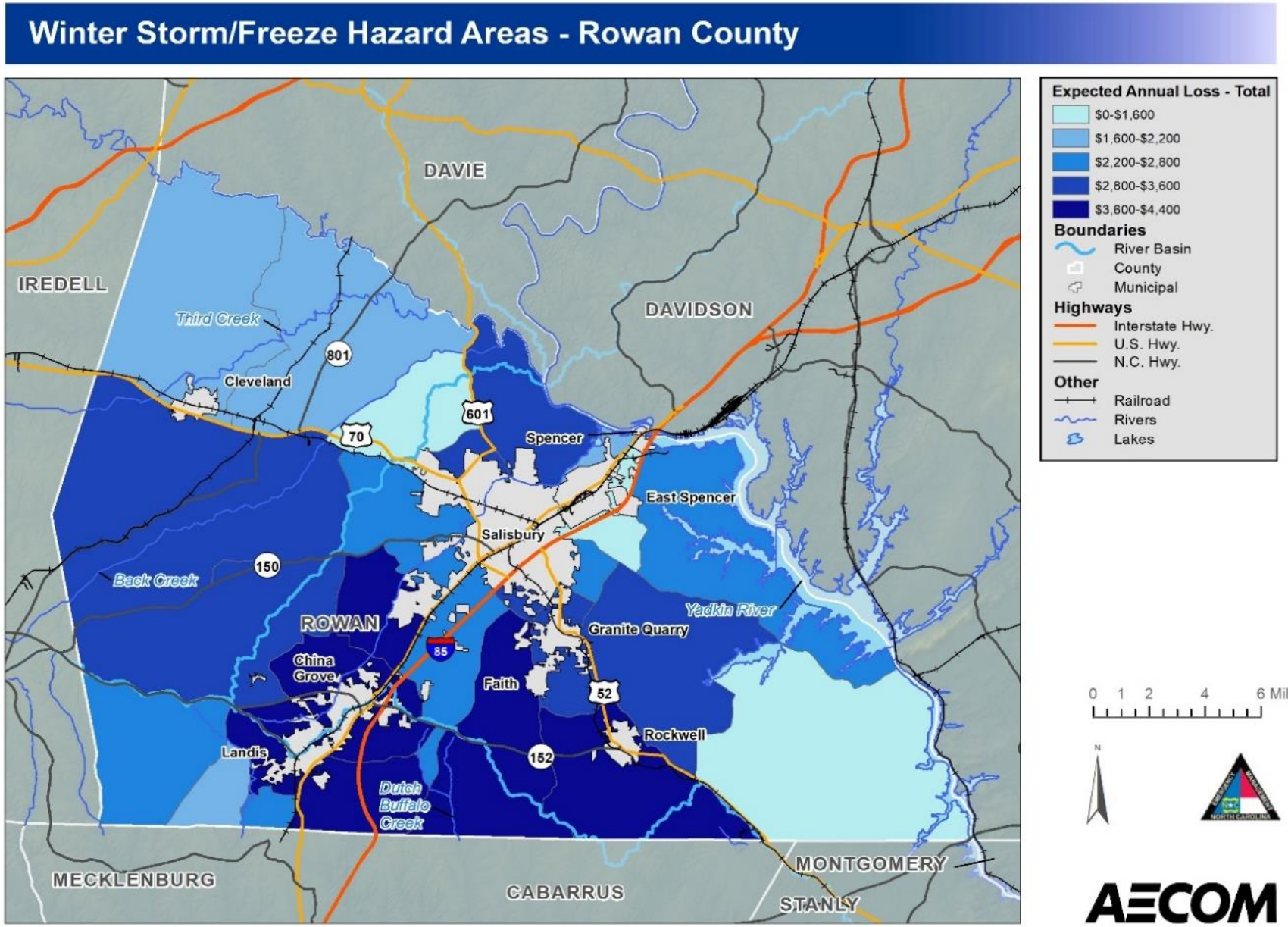


Figure 5- 50: Winter Storm and Freeze Hazard Areas in Rowan County

5.12.2. Location

The entire continental United States is susceptible to winter storm and freeze events. Some ice and winter storms may be large enough to affect several states, while others might affect limited, localized areas. The degree of exposure typically depends on the normal expected severity of local winter weather. The Iredell Rowan Region is accustomed to severe winter weather conditions and often receives winter weather during the winter months. Given the atmospheric nature of the hazard, the entire region has uniform exposure to a winter storm. The maps below depict the extent characteristics of the hazard for greatest all-time one day snow: High being 36 inches and Low being 1 inch.

Maps depicted in Figure 5- 53, Figure 5- 52, Figure 5- 54, Figure 5- 56, Figure 5- 57, Figure 5- 58, Figure 5- 59, Figure 5- 60, Figure 5- 61, Figure 5- 62, Figure 5- 63, Figure 5- 64, Figure 5- 65, Figure 5- 66, and Figure 5- 67 represent seasonal snowfall accumulation rasters that were downloaded from the NOAA National Gridded Snowfall Analysis database. A Maximum Raster Calculation was run on all the rasters to return a single raster layer representing the maximum depth of snowfall for all seasonal accumulations. The data collection is from 2008-2024 in the maps below.

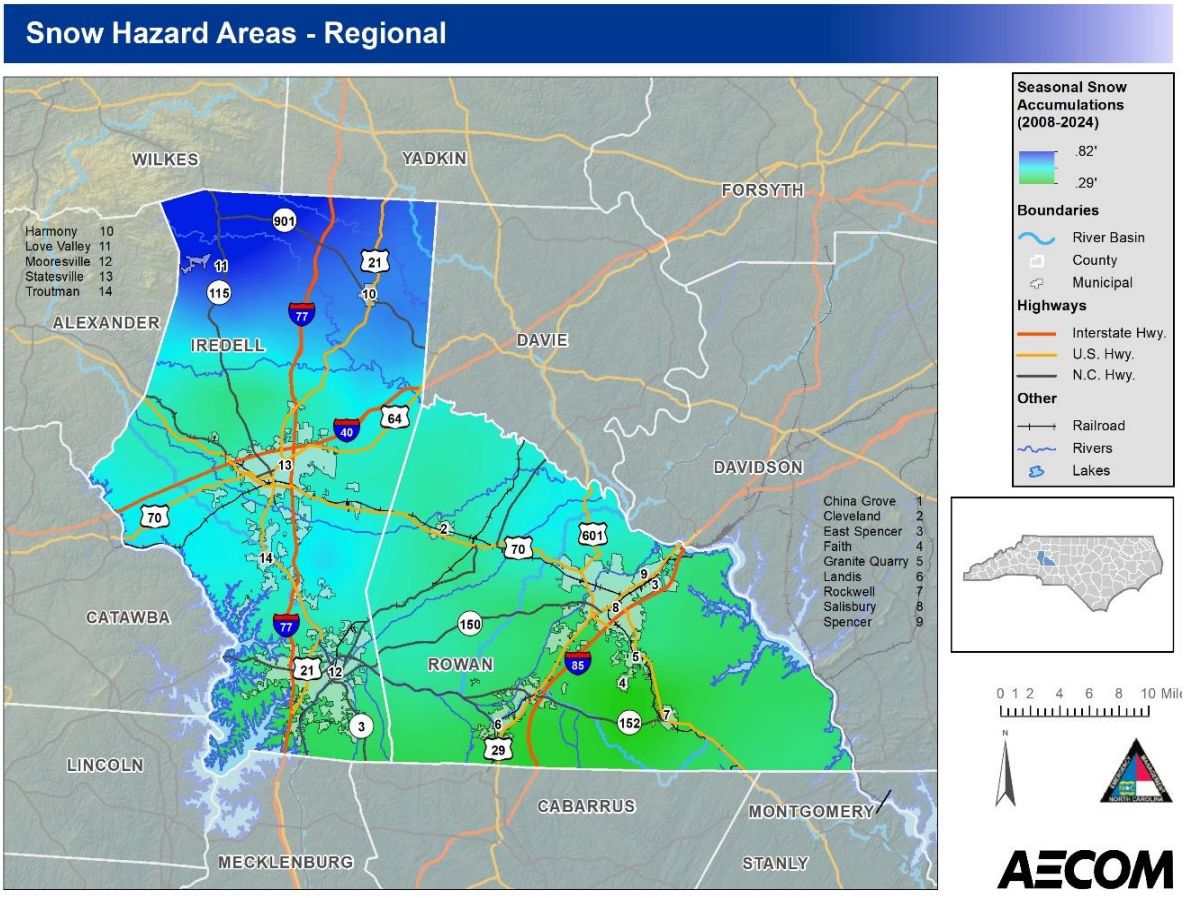


Figure 5- 51: Snow Hazard Areas in the Planning Area

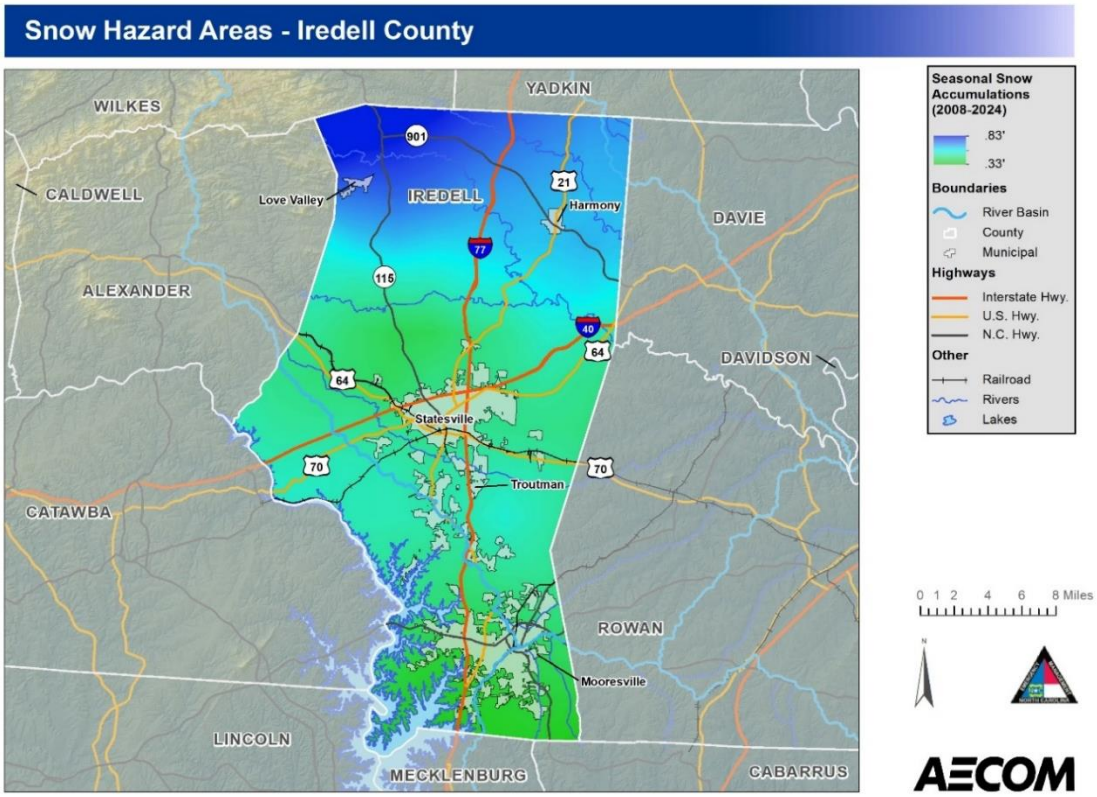


Figure 5- 52: Snow hazard areas in Iredell County

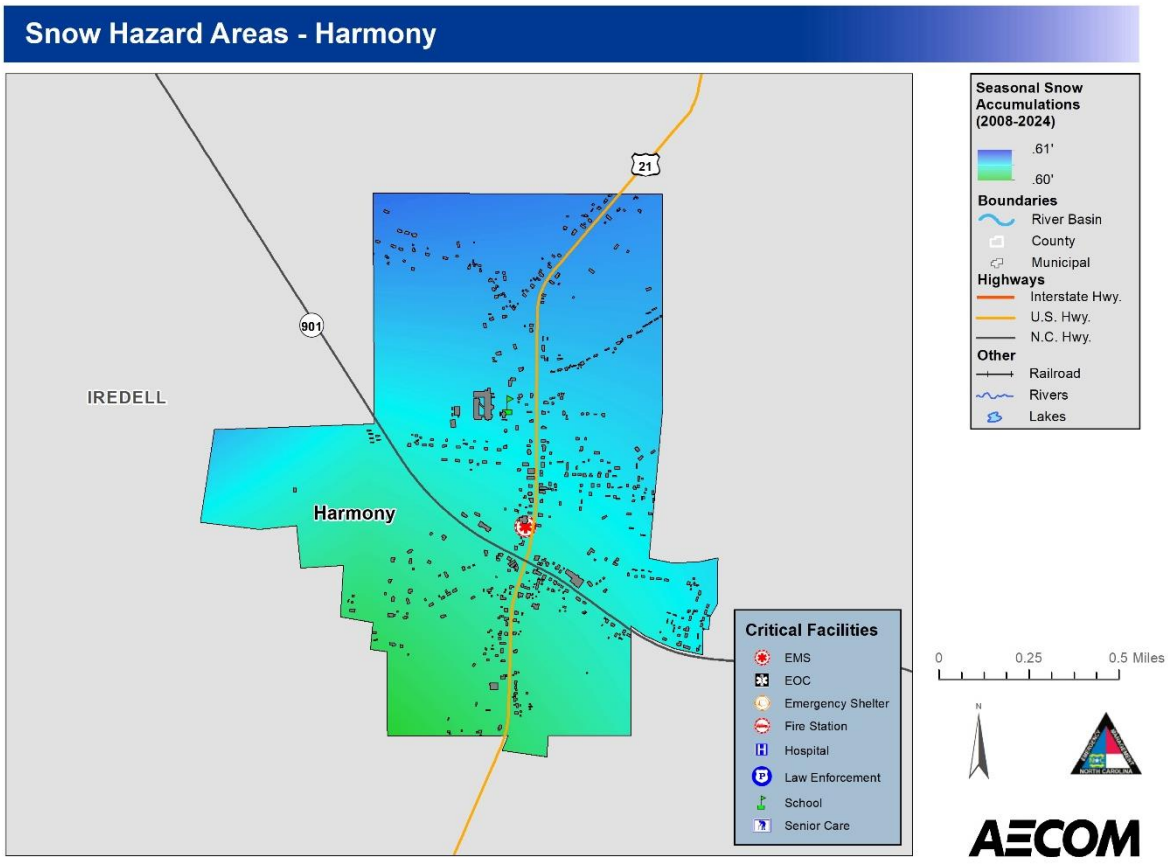


Figure 5- 53: Snow hazard areas in Harmony

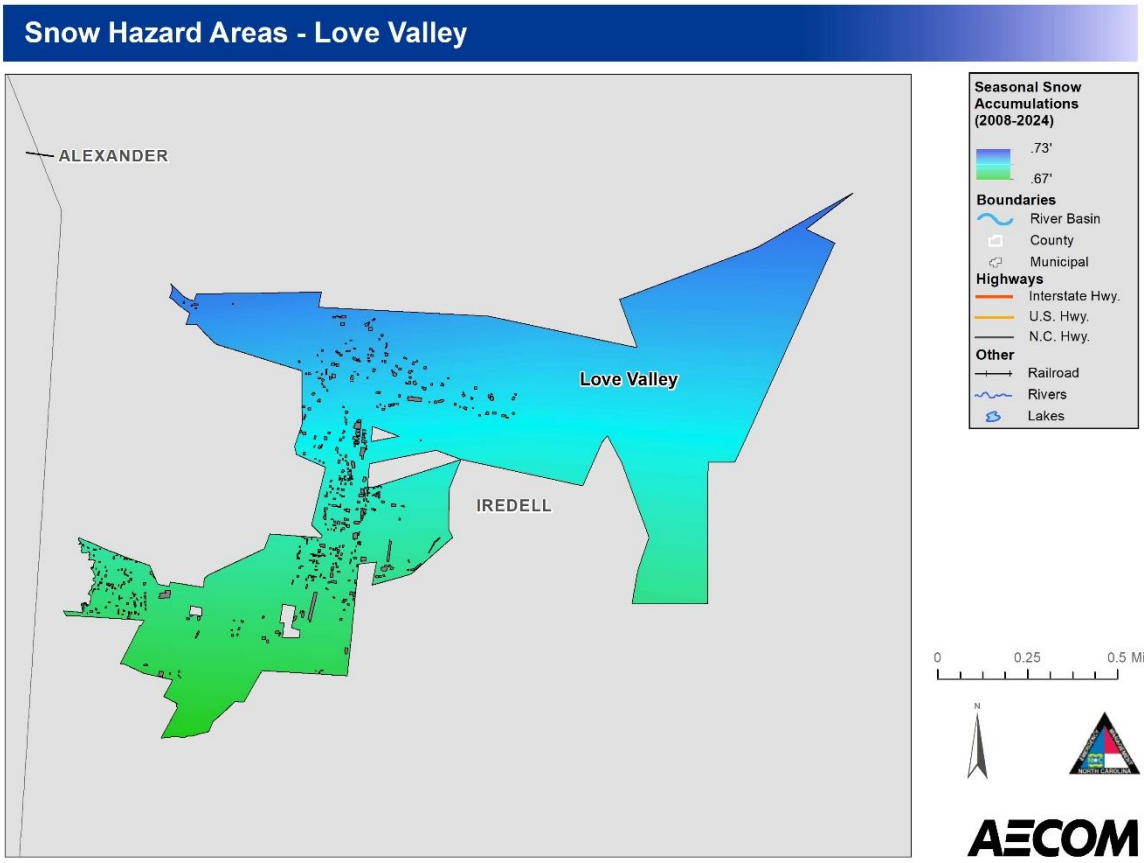


Figure 5- 55: Snow hazard areas in Love Valley

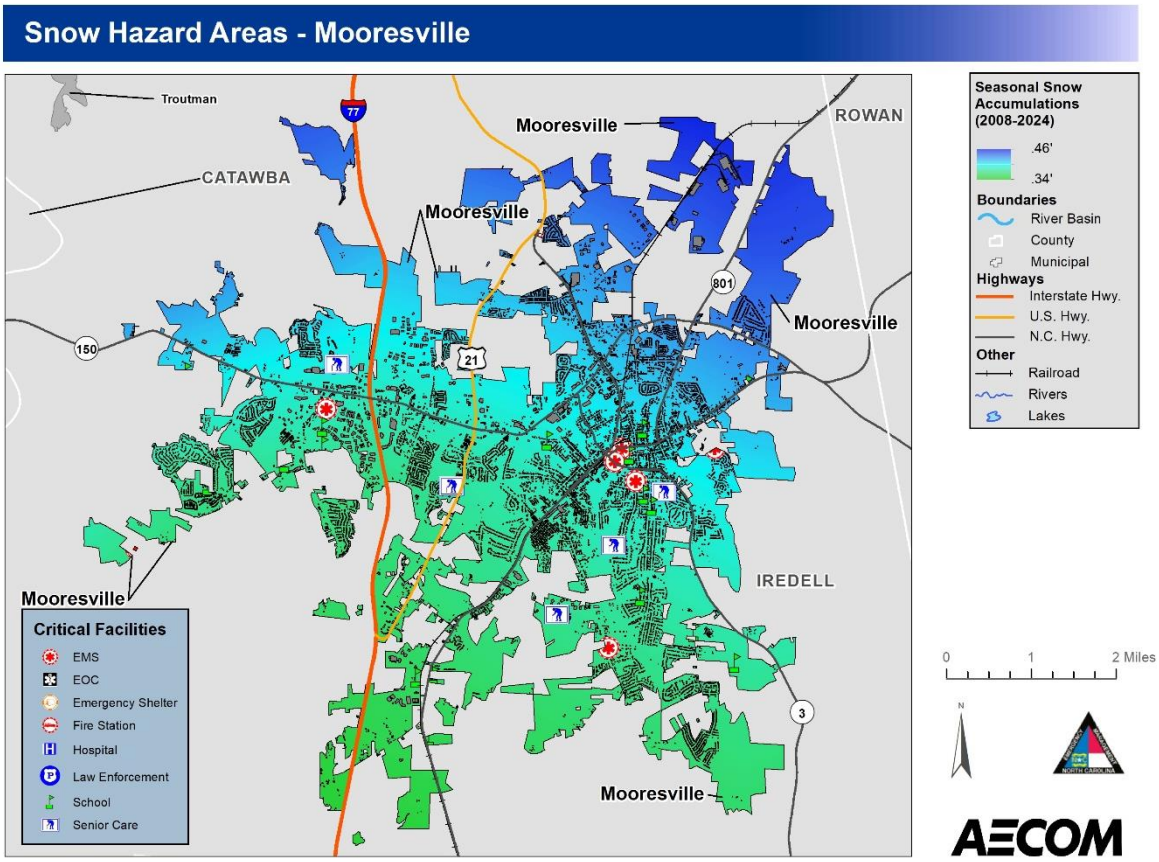


Figure 5- 54: Snow hazard areas in Mooresville

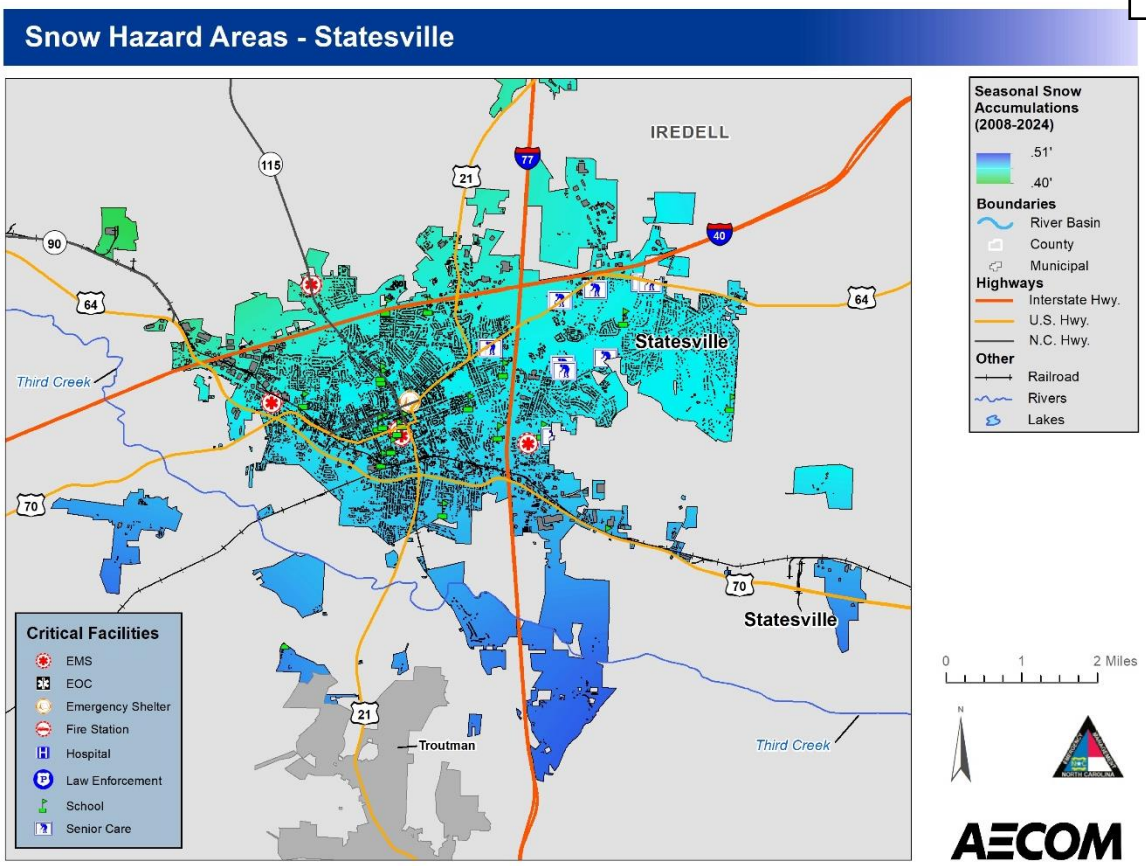


Figure 5- 57: Snow hazard areas in Statesville

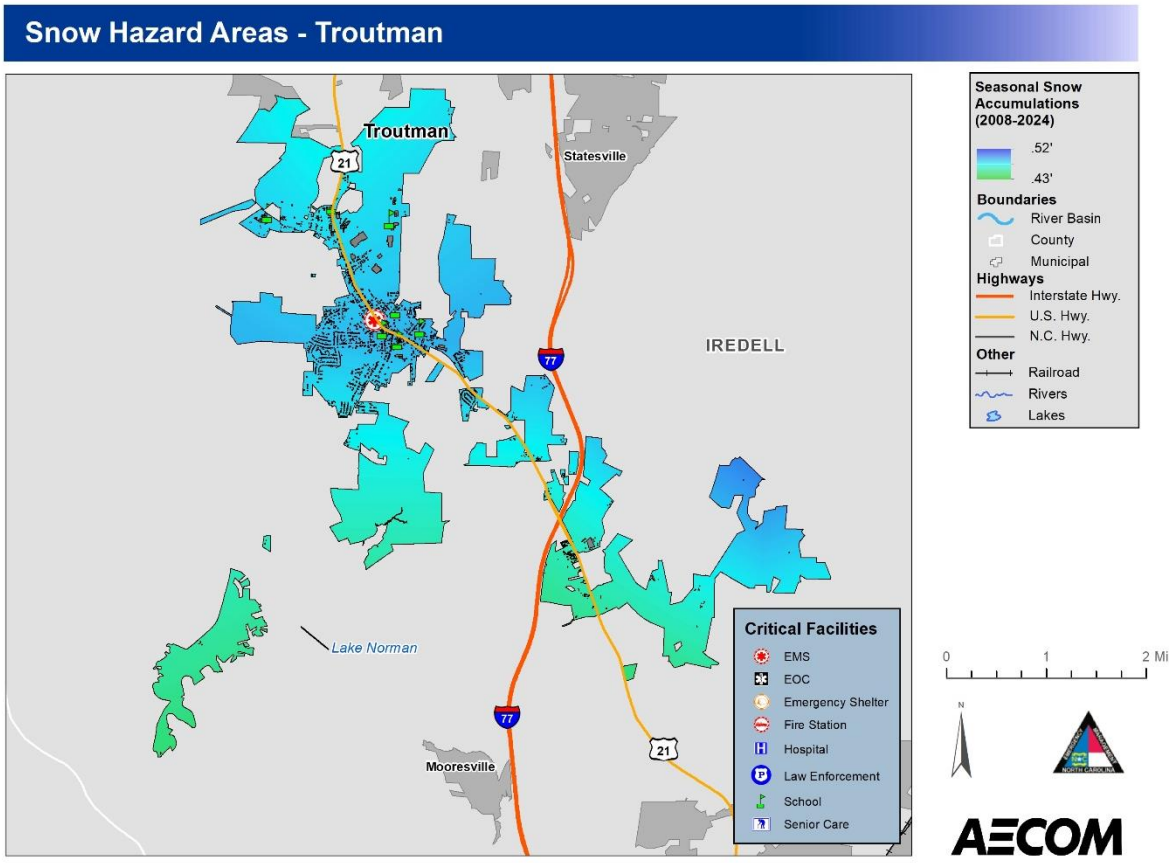


Figure 5- 56: Snow hazard areas in Troutman

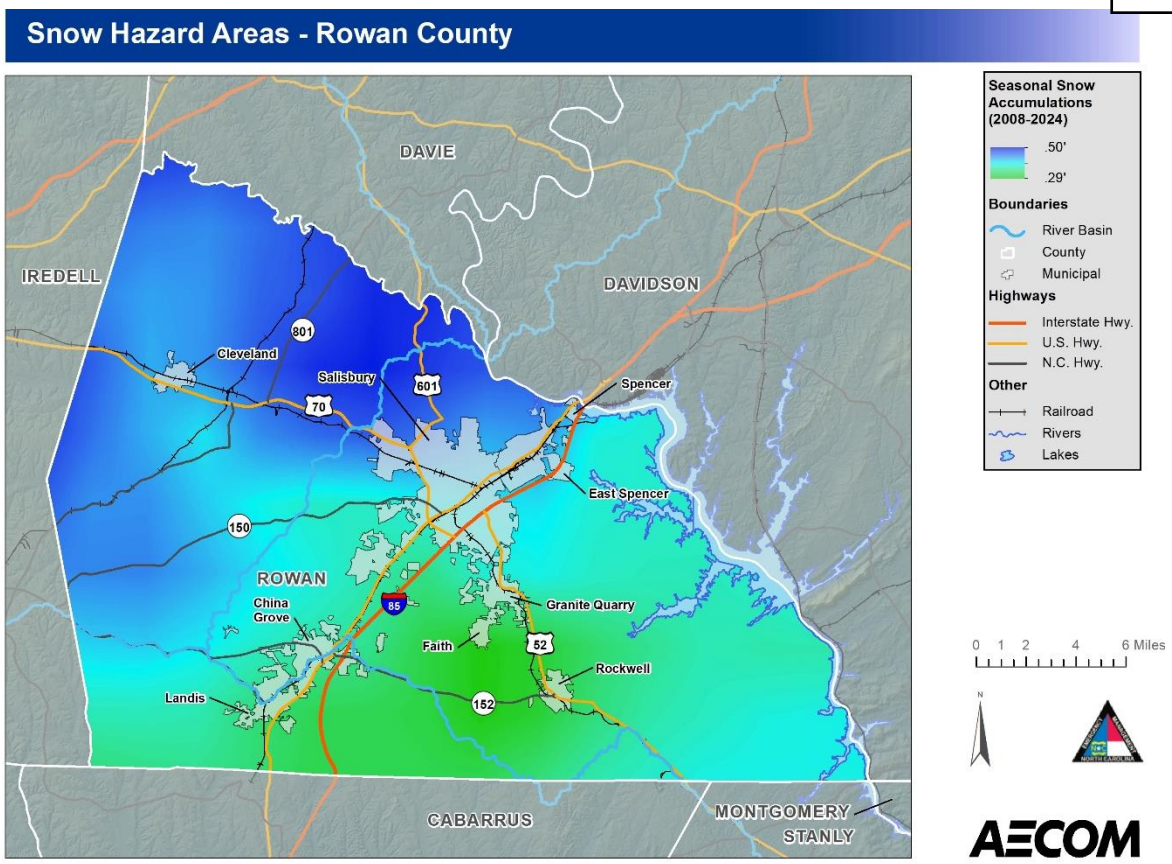


Figure 5- 58: Snow hazard areas in Rowan County

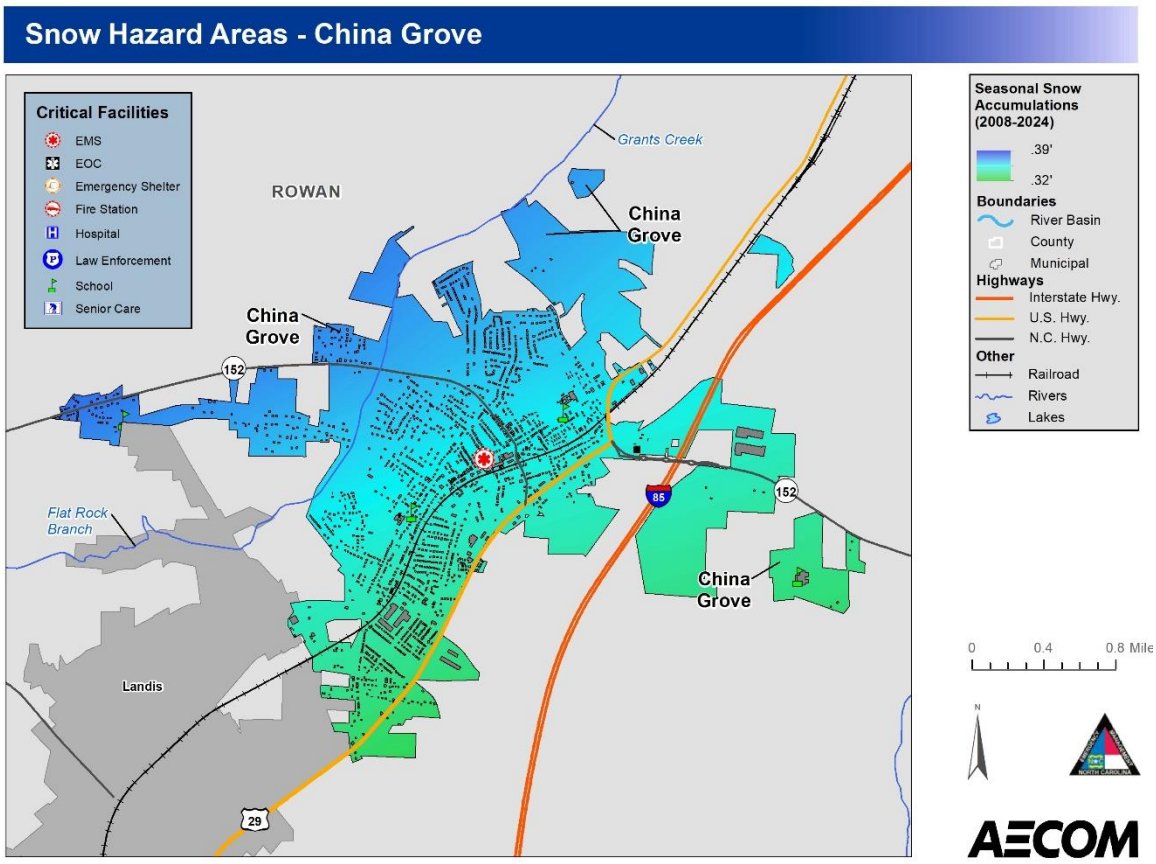


Figure 5- 59: Snow hazard areas in China Grove

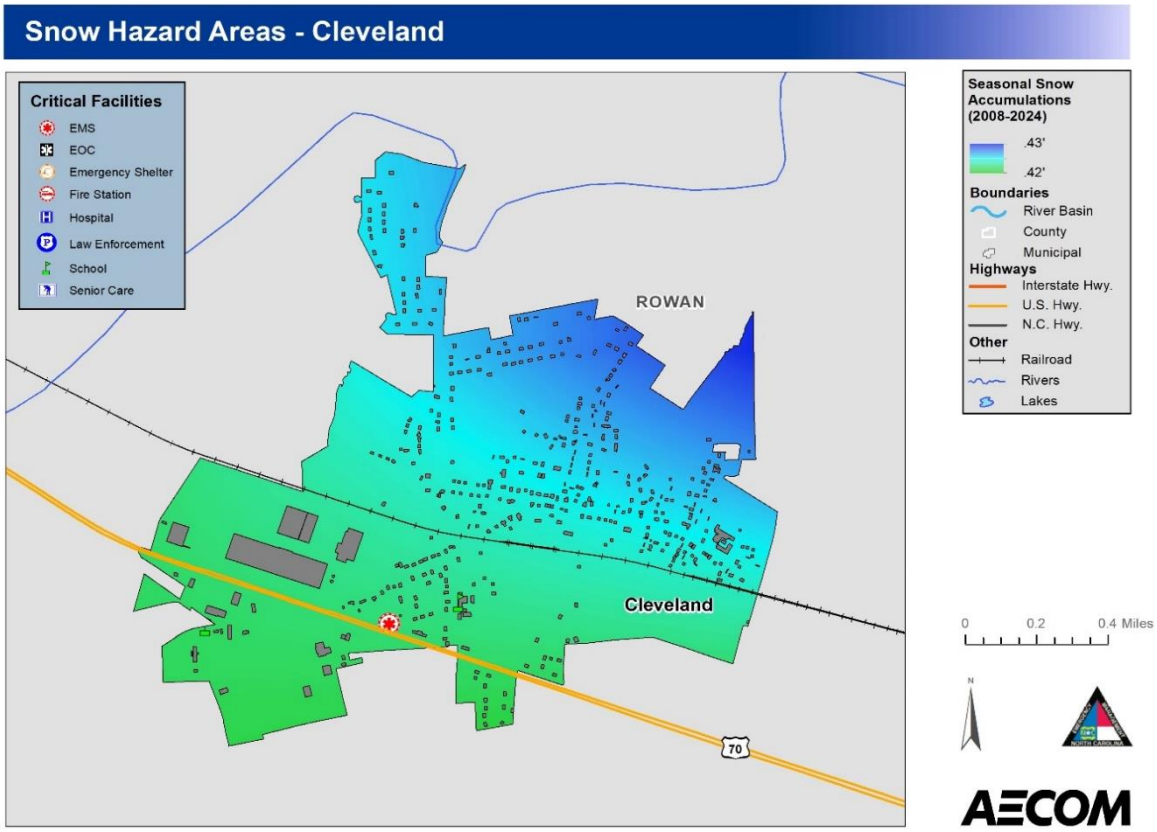


Figure 5- 61: Snow hazard area in Cleveland

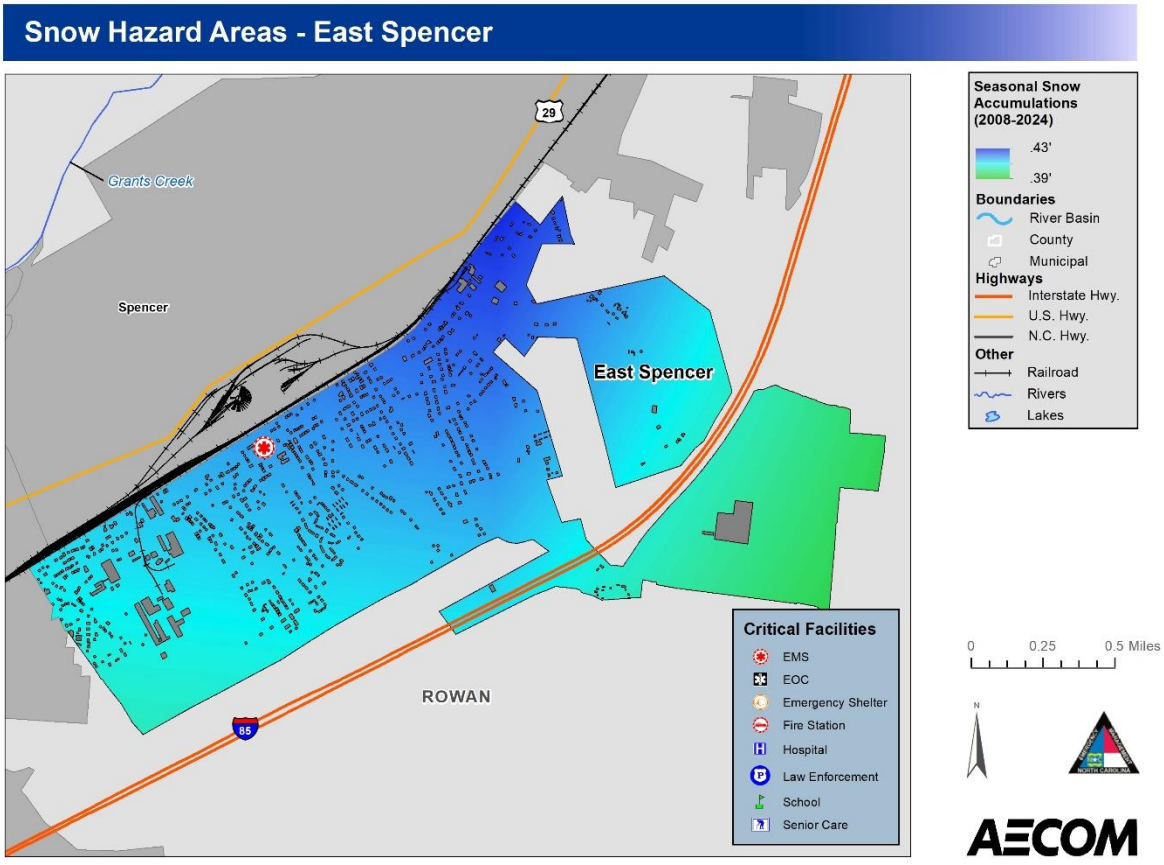


Figure 5- 60: Snow hazard areas in East Spencer

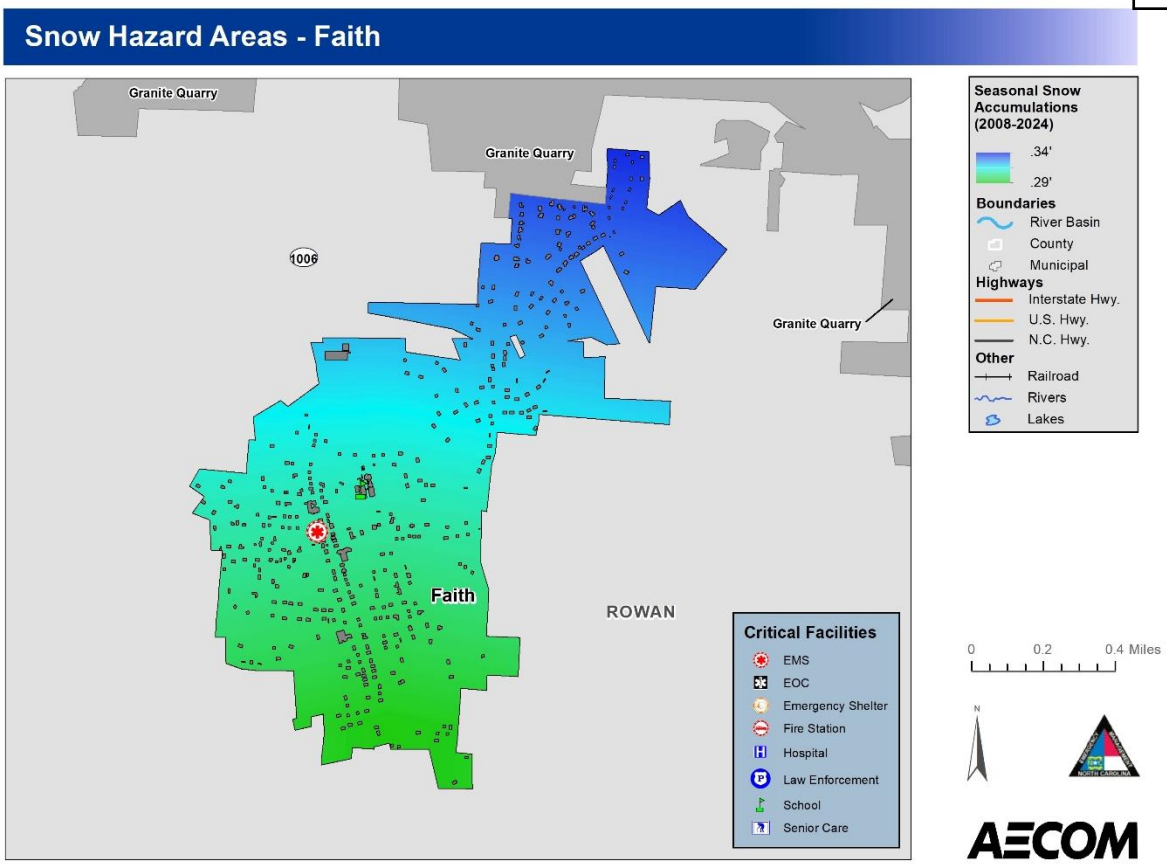


Figure 5- 63: Snow hazard areas in Faith

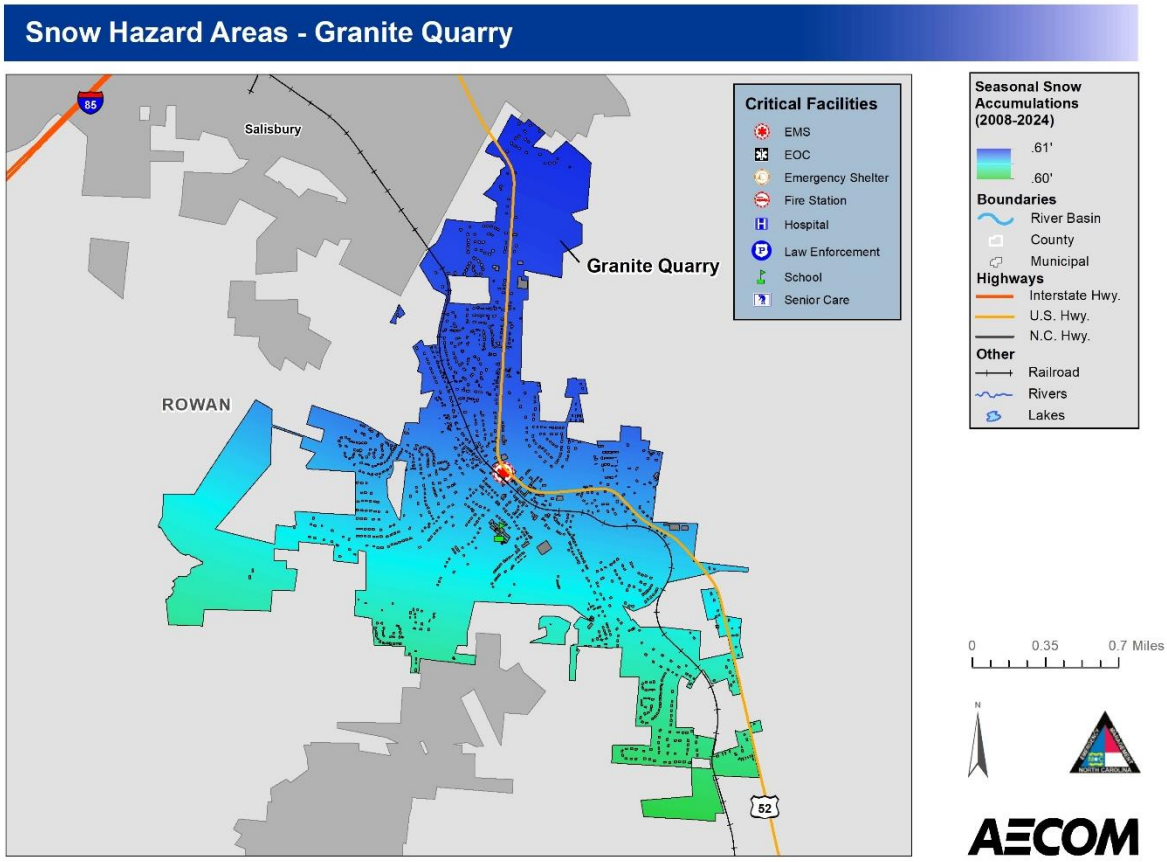


Figure 5- 62: Snow hazard areas in Granite Quarry

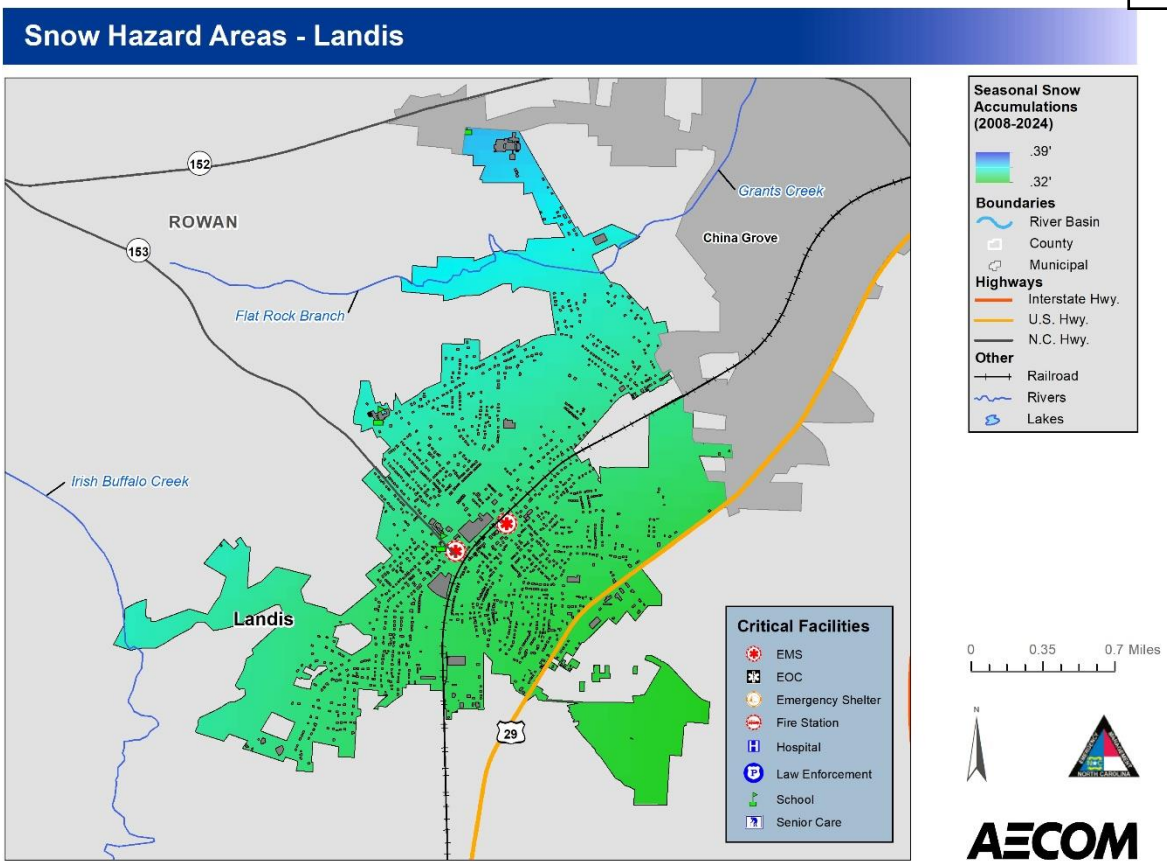


Figure 5- 65: Snow hazard areas in Landis

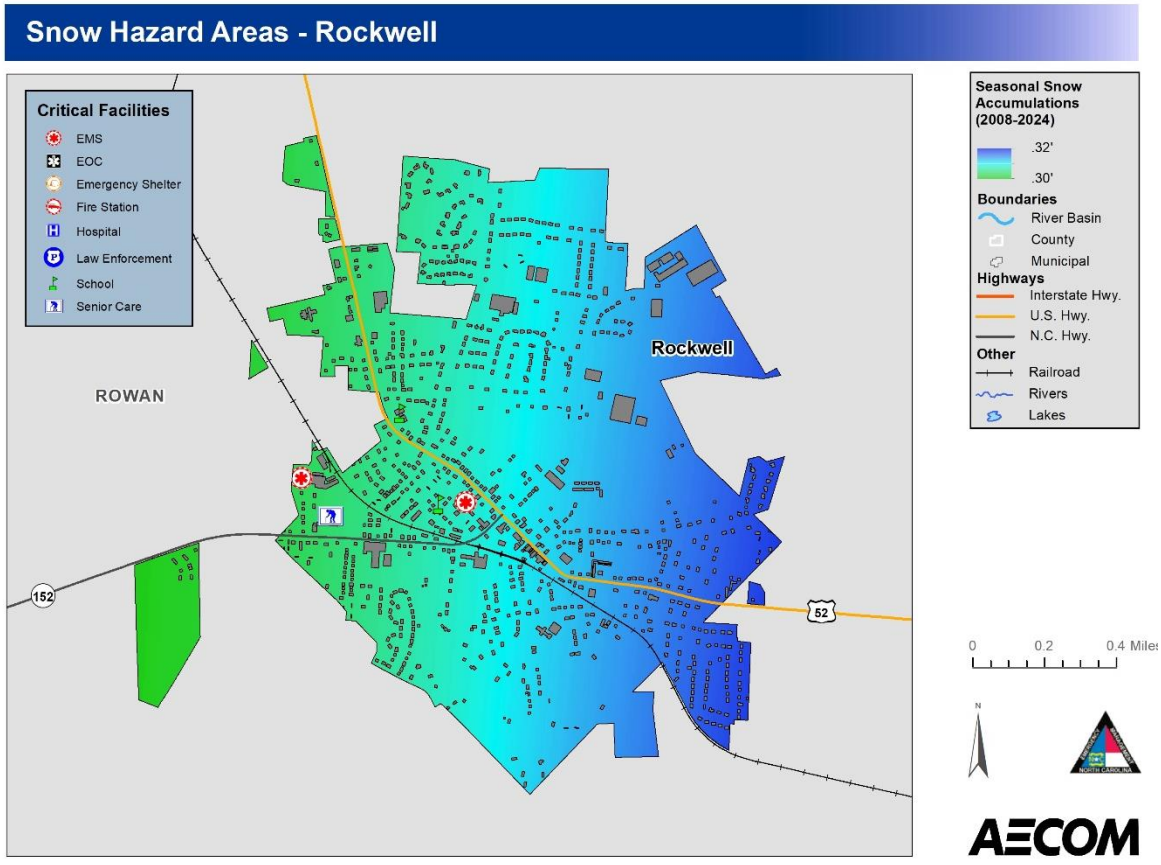


Figure 5- 64: Snow hazard areas in Rockwell

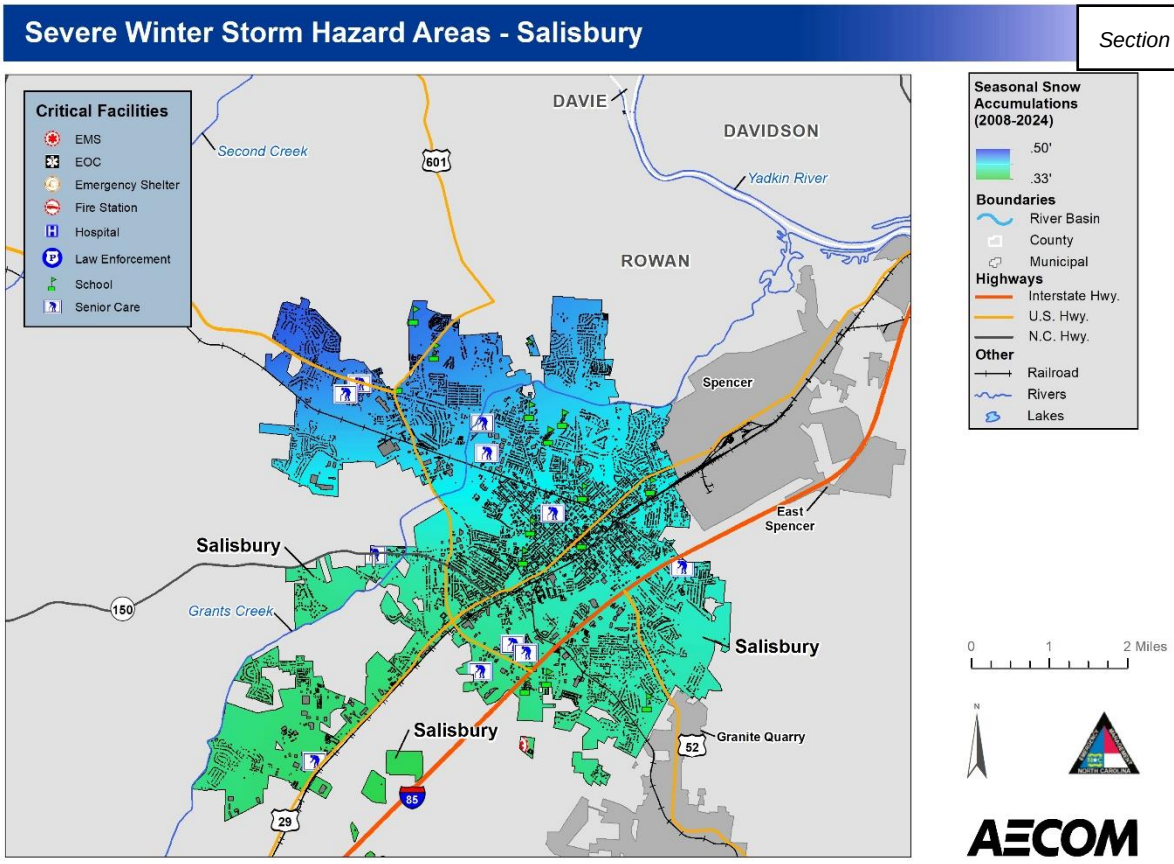


Figure 5- 66: Snow hazard areas in Salisbury

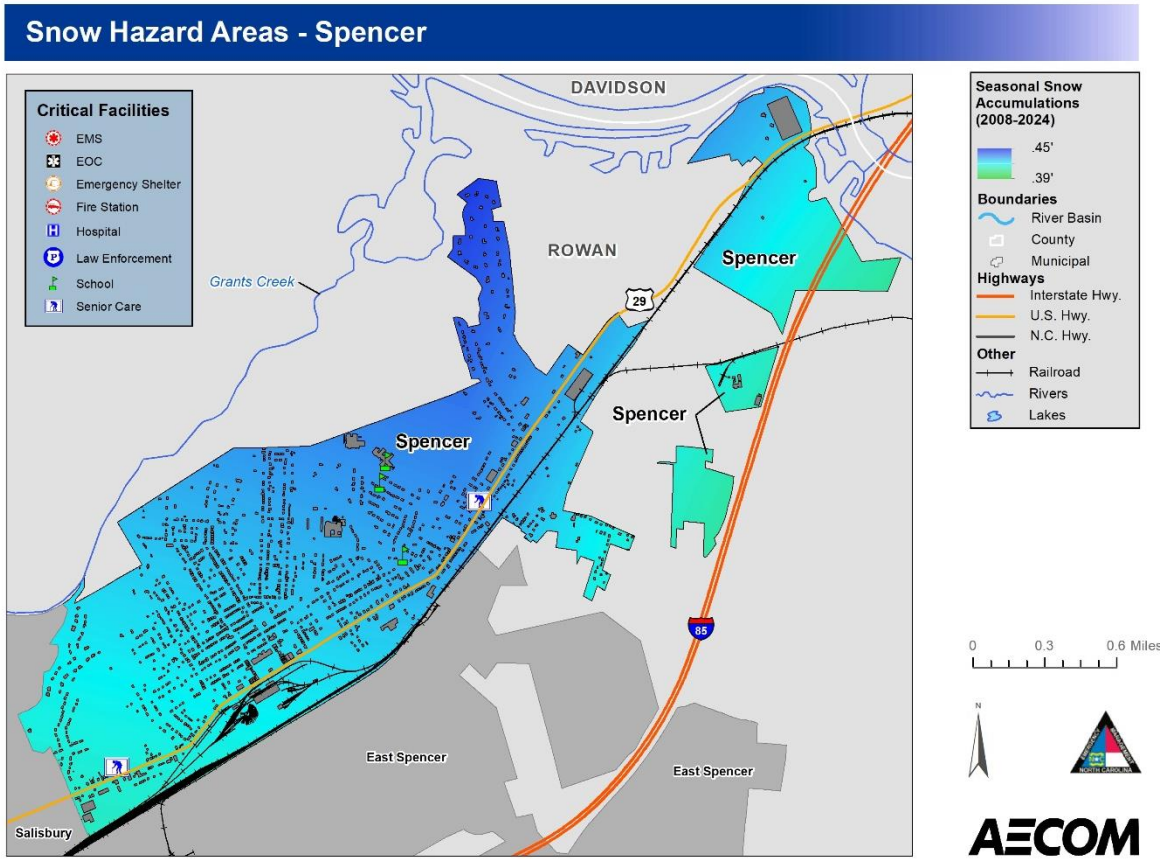


Figure 5- 67: Snow hazard areas in Spencer

5.12.3. Extent

Table 5- 38 below shows the worst recorded events for the Region between 2018 and 2024.

5.12.4. Historical Occurrences

According to the National Climatic Data Center, there have been 50 reported events of winter weather, heavy snow, winter storms, extreme cold, and frost/freeze between 2000 and 2024, and the NCDC reports that these events have a property damage total of 10,000 and a crop damage total of $2,000,000 (Table 5- 38)[38]. These events resulted in over $20 million in damages. Table 5- 38 shows some of the more recent winter weather occurrences from 2018 to 2024 from NCDC.

Table 5- 38: NCDC Winter Weather Occurrences in the Planning area from 2018-2024.

County	Date	Description[39]	Iredell	Rowan
			Total Reported Precipitation (Inches)[40]	
Iredell, Rowan	2/7/2022	Moisture associated with low pressure developing off the South Carolina coast overspread the North Carolina Piedmont during the morning, resulting in a brief period of light precipitation. Enough freezing air was in place to allow much of this to fall as freezing rain north of I-85. Light ice accretion of around a tenth of an inch or less was reported, on elevated surfaces. Roads were warm enough such that travel issues were primarily relegated to a few slick spots on bridges and overpasses. Spotty dustings of snow were also reported north of I-40.	0.6	0.71
Iredell, Rowan	1/22/2022	Moisture overspread the North Carolina Piedmont during the evening of the 21st as low pressure developed off the Southeast Coast. Light precipitation developed as a result, with enough freezing air in place to allow much of the precipitation to fall as light snow. By the time the snow tapered off around midnight, 1 to 2 inches had accumulated across much of the area, with locally higher amounts of around 3 inches.	0.2	1.6
Iredell, Rowan	1/16/2022	Moisture overspread the North Carolina Piedmont early on the 16th as strengthening low pressure moved across the Deep South. Strong northeast winds supplied ample freezing air for the precipitation to begin as light snow across much of the area, resulting in light snow accumulations of up to a couple of inches during the pre-	4.5	4.3

[38] These ice and winter storm events are only inclusive of those reported by the National Climatic Data Center (NCDC). It is likely that additional winter storm conditions have affected the Iredell Rowan Region
[39] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/
[40] North Carolina State Climate Office. (2021). Winter Storm Event Database [Dataset]. In North Carolina State Climate Office. Retrieved May 10, 2024, from https://products.climate.ncsu.edu/weather/winter/event/?e=615

County	Date	Description[39]	Iredell	Rowan
			Total Reported Precipitation (Inches)[40]	
		dawn hours. Slight warming of the air aloft resulted in snow changing to sleet across much of this area by sunrise. By late morning, total snow, and sleet accumulations of 2 to 5 inches were reported, with locations north of I-40 seeing more snow than sleet, and locations south of I-85 seeing more sleet. Further warming aloft resulted in precipitation briefly changing to freezing rain before tapering off by early afternoon, with light ice accretion reported on top of the sleet and snow. However, scattered snow showers redeveloped during the afternoon and evening, producing spotty additional light accumulations.		
Iredell, Rowan	2/17/2021	Moisture and precipitation overspread the western Carolinas late in the evening of the 17th and continued into the morning of the 18th in association with an area of low pressure moving along the Gulf Coast. Enough freezing air was in place to allow some of this precipitation to fall as freezing rain, until warming temperatures gradually forced a transition to rain from southwest to northeast. Total ice accretion was in the .10 to .20 range, with spotty higher amounts. Due to warm road temperatures, accretion was primarily limited to elevated surfaces and limited travel difficulties.	3.77	0.65
Iredell, Rowan	2/6/2021	Snow developed across th Piedmont and foothills of western North Carolina during the evening of the 6th and continued into the overnight hours before tapering off or changing to rain during the early morning of the 7th. Total snow accumulations generally ranged from 1 to 3 inches across the area, with some locally higher amounts of around 4 inches reported. The snow briefly changed to sleet and freezing rain in some areas before the precipitation ended, but accumulations were minimal.	1	0.5
Iredell	1/30/2021	A wintry mix developed across portions of the mountains and portions of the foothills during the evening of the 30th as a frontal system moved across the Tennessee and Ohio Valleys. Precipitation began as snow in most locations and accumulated lightly before warming temperatures aloft forced a transition to sleet and freezing rain. Total accumulations of sleet and snow ranged from one half inch to less than two inches, although some locations above 3000 feet (about 914.4 m) or so saw up to 3 inches.	0	N/A
Iredell	12/16/2020	Light freezing rain developed over portions of western North Carolina, primarily areas along the eastern Blue Ridge escarpment, the northern foothills, and northwest Piedmont as areas of low pressure moved along the Gulf and southeast Atlantic coast. The precipitation changed to rain in most locations during the late morning as temperatures warmed above freezing. Total ice accretion was around a tenth of an inch or less, although isolated	1.15	1.8

County	Date	Description[39]	Iredell	Rowan
			Total Reported Precipitation (Inches)[40]	
		spots along the eastern Blue Ridge saw around a quarter of an inch.		
Iredell, Rowan	2/21/2020	Precipitation developed across the northwest Piedmont during the afternoon and early evening in association with a developing coastal low-pressure system. Precipitation began as rain in most areas but transitioned to snow quickly. A warm ground and rain mixing in undercut the accumulation potential significantly, but total snowfall of around an inch was reported by early evening.	1.3	0.5
Iredell	12/13/2019	Moisture associated with a developing low-pressure system along the Southeast Coast overspreading a cool and dry air mass over western North Carolina resulted in development of freezing rain, along the Blue Ridge escarpment, and along and near the I-40 corridor in the foothills and Piedmont. Light ice accretion of around .10 inch or less was primarily confined to elevated surfaces, although a few slick spots developed over the mountains. Precipitation changed to rain throughout the morning as temperatures warmed above freezing.	1.27	1.81
Iredell	2/19/2019	A moist southerly flow developed above a cool wedge of high pressure resulted in development of precipitation across western North Carolina during the afternoon and evening of the 19th. Just enough freezing air was in place to allow the precipitation to initially fall as a mixture of sleet and snow along the eastern Blue Ridge escarpment as well as the far northern foothills and Piedmont. As warm air developed aloft, precipitation gradually transitioned to sleet and freezing rain in most of these locations during the overnight and early morning hours of the 21st. Most areas transitioned to rain during the morning of the 21st, although some pockets of freezing rain persisted in sheltered areas along the Blue Ridge. Total sleet and snow accumulations ranged from one half inch to less than 2 inches, although some high elevation areas along the Blue Ridge saw 2 to 4 inches of snow. Some locations along the Blue Ridge saw between .1- and .2-inch ice accretion before the precipitation tapered off or changed to rain.	0	0
Iredell, Rowan	1/23/2019	Patchy light freezing rain developed across western North Carolina during the early morning hours of the 23rd and continued off and on through mid-morning. Ice accretion was confined to areas north of I-85, and was quite light in most areas, around a tenth of an inch or less. Some slick spots developed on roads, resulting in a few traffic accidents.	0.93	0.98
Rowan	1/12/2019	Moist air flowing over a wedge of freezing air banked against the eastern slopes of the Appalachians resulted in precipitation development across the foothills and northern and far western Piedmont during the evening of the 12th, continuing through the overnight and early		

County	Date	Description[39]	Iredell	Rowan
			Total Reported Precipitation (Inches)[40]	
		morning hours of the 13th. The atmosphere quickly cooled to around freezing north of I-85, resulting in some freezing rain in these areas. By the time the precipitation ended around sunrise, ice accretion of around a tenth of an inch was common across this area, on elevated surfaces. Some areas closer to I-40 saw amounts closer to 1/4 inch.		
Iredell, Rowan	12/8/2018	Rain and snow developed shortly after midnight across the North Carolina Piedmont, becoming all snow in most areas by daybreak, with some sleet mixing in along and south of the I-85 corridor. Snow, moderate to heavy at times, continued across North Carolina Piedmont through the morning of the 9th, before tapering off (or changing to rain) by early afternoon. Sleet and rain mixed in with the snow at times, especially closer to the I-85 corridor, including much of Charlotte and vicinity. This cut down on storm total amounts in those areas, where amounts were in the 1-to-3-inch range. However, totals north and west of the city range from 4 to 6 inches, with locally higher amounts of up t0 8 inches reported closer to I-40. Snow developed across northwest North Carolina around midnight the morning of the 9th and began accumulating quickly. Moderate to heavy snow continued through the morning of the 9th before tapering off during the early afternoon. Storm total accumulations were in the 10-to-15-inch range, with slightly lower amounts south of I-40, and locally higher amounts across the mountains, particularly the high peaks along the Blue Ridge, where more than two feet fell. Travel was paralyzed across this area for a couple of days.	7	8
Iredell, Rowan	11/24/2018	Precipitation developed across the mountains, foothills, and far western Piedmont of North Carolina during the overnight, as a wave of low pressure moved along the Gulf Coast. Precipitation began as rain in most areas but transitioned to freezing rain as a wedge of freezing air locked in across the area. By the time the precipitation tapered off around sunrise, ice accretion of one tenth to one quarter inch was reported in many areas, with the highest amounts reported near the Blue Ridge. Scattered downed trees and power lines/power outages were reported.	0.82	0.68
Iredell	3/24/2018	Precipitation developed across the northern foothills and northwest Piedmont during the morning of the 24th, as a warm front lifted slowly north across the Tennessee Valley and the Carolinas. After falling as rain for much of the day, precipitation turned to snow and sleet during the evening as cooler air funneled into the area from the northeast. Many areas along and north of I-40 received a quick half inch to 2 inches of snow and sleet before the precipitation tapered off during the early morning hours.	0.5	0

County	Date	Description[39]	Iredell	Rowan
			Total Reported Precipitation (Inches)[40]	
Iredell, Rowan	3/12/2018	Precipitation developed across the northern foothills and northwest Piedmont during the early morning in association with a frontal zone and associated low pressure. While most of the precipitation fell as rain, cooler air filtering in from the north, along with cooling brought about higher precipitation rates forced a brief change over to snow around sunrise. The snow accumulated quickly in spots, and some areas north of I-40 reported as much as 4 inches. The quick accumulation caused slick spots to develop on roads, with quite a few traffic accidents reported along the I-40 corridor. However, warm ground and quickly warming temperatures ended resulted in fast melting after the snow.	1	1
Iredell, Rowan	2/4/2018	As a wave of low pressure developed and moved along a stationary front over the Deep South, moisture spread into western North Carolina during the early morning hours of the 4th. The precipitation began as a mixture of rain, sleet, and snow in many areas. While some light accumulation of sleet and snow was reported across the mountain valleys, all areas except for the high peaks and ridge tops transitioned to freezing rain by mid-morning. Most measurable ice was reported in Piedmont and foothills, where amounts of .1 to .2 inch were common. Due to temperatures hovering right around freezing, roads remained wet, and ice accretion was primarily confined to elevated surfaces and vegetation. Meanwhile, snowfall of 5-7 inches was reported above about 5000 feet (about 1.52 km).	0	0
Iredell, Rowan	1/17/2018	As a strengthening upper-level disturbance and associated cold front approached the region from the Tennessee Valley, light precipitation developed across portions of the Piedmont and foothills of North Carolina during the early morning hours. While the precipitation started as rain or a rain/snow mix in most areas, a transition to snow had occurred in most locations by sunrise. As the snow band moved east throughout the morning, snowfall rates increased, with heavy snowfall accumulations reported by early afternoon. By the time the snow tapered off to flurries, total accumulation ranged from 3 to 6 inches across much of the area.	5	5.5

5.12.5. Probability of Future Occurrences

The NRI utilizes Winter Weather data from 2005 to 2021 and ice storm data from 1946 to 2014 to derive risk data and information. The NRI reports that the counties of Iredell and Rowan are expected to experience 2.2 winter weather events per year, which include winter storm events that have main precipitation types of snow, sleet, or freezing rain. Ice storms are expected to occur 1.7 times per year in Iredell County and 2.1 times per year for Rowan County. While

Iredell is at a very high risk of ice storm impacts, it has a lower probability of occurrence than Rowan County, which has a relatively high risk of ice storms and a higher frequency of ice storm events. Iredell County is expected to experience a significantly higher EAL, $2,300,000 per year, compared to Rowan County's EAL, $467,000 per year, due to ice storms.

For more information about the NRI expected impacts of ice storms and winter weather events by census tract, see Appendix K.

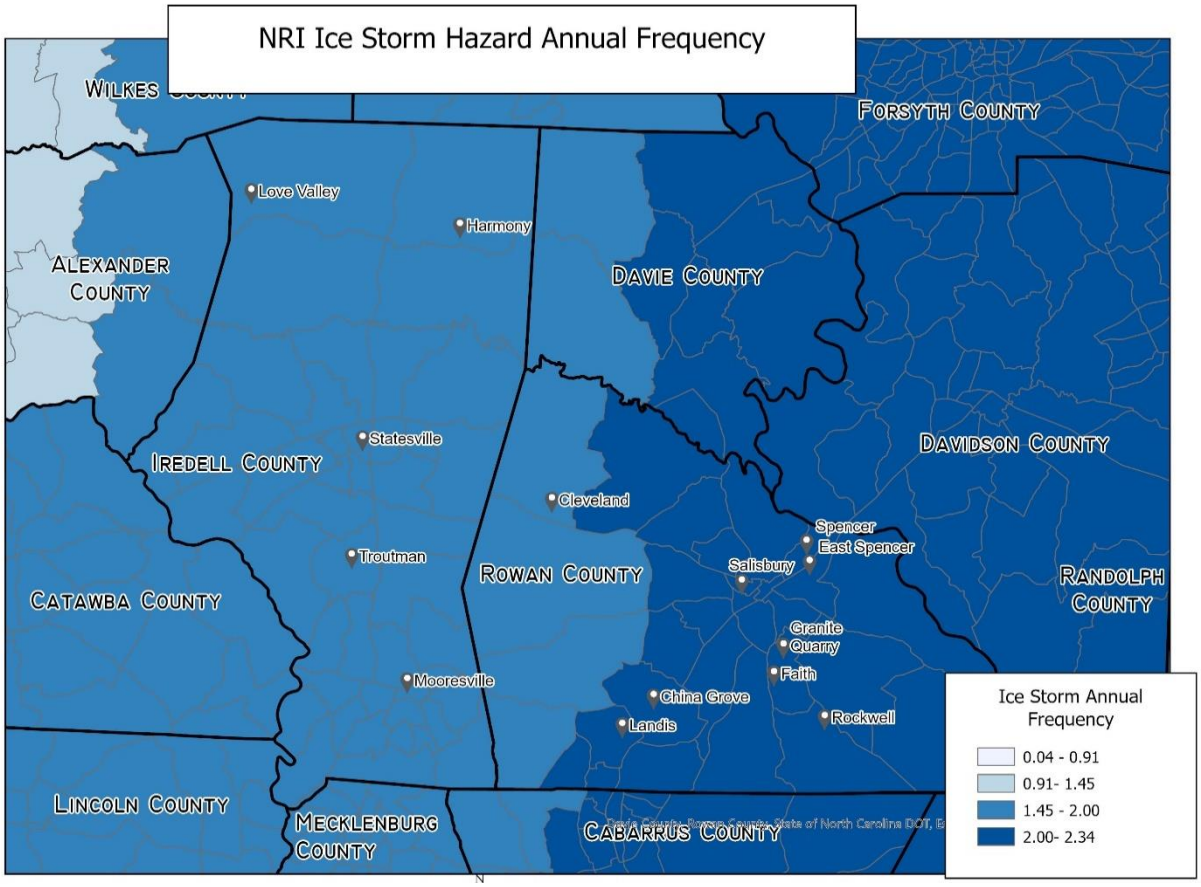


Figure 5- 68: NRI Ice Storm Expected Annual Frequency

Table 5- 39: NRI Risk Values for Winter Weather in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Moderate	Relatively Moderate
	Value	$108,000	$82,000
	Frequency	2.2 Events Per Year	2.2 Events Per Year
Risk Index	Rating	Relatively Moderate	Relatively Moderate
	Score	67.6	66.1

Table 5- 40: NRI Risk Values for Ice Storm Hazards in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Very High	Relatively High
	Value	$2,300,000	$476,000
	Frequency	1.7 events per year	2.1 events per year
Risk Index	Rating	Very High	Relatively High
	Score	98.0	90.1

Table 5- 41: NRI winter weather data by jurisdiction based on census tracts within each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$10,557.61	52.84	Relatively Moderate	55.54	Relatively Moderate	2.17
Harmony	$4,746.65	55.19	Relatively Moderate	63.47	Relatively High	2.17
Love Valley	$2,997.87	68.89	Relatively High	55.38	Relatively Moderate	2.17
Mooresville	$51,639.94	65.99	Relatively High	55.56	Relatively Moderate	2.17
Statesville	$47,202.37	61.23	Relatively High	55.16	Relatively Moderate	2.17
Troutman	$12,011.77	67.77	Relatively High	55.44	Relatively Moderate	2.17
Rowan County *(Unincorporated Area)*	$4,474.01	62.95	Relatively High	54.99	Relatively Moderate	2.17
China Grove	$8,553.91	60.81	Relatively High	55.17	Relatively Moderate	2.17
Cleveland	$5,013.40	59.48	Relatively Moderate	55.48	Relatively Moderate	2.17
East Spencer	$8,049.50	59.43	Relatively Moderate	55.18	Relatively Moderate	2.17
Faith	$3,794.81	56.58	Relatively Moderate	55.48	Relatively Moderate	2.17
Granite Quarry	$4,929.53	55.58	Relatively Moderate	55.10	Relatively Moderate	2.17
Landis	$7,742.19	62.57	Relatively High	55.40	Relatively Moderate	2.17
Rockwell	$2,334.31	62.49	Relatively High	55.52	Relatively Moderate	2.17
Salisbury	$33,754.71	61.23	Relatively High	55.44	Relatively Moderate	2.17
Spencer	$15,279.30	63.19	Relatively High	55.11	Relatively Moderate	2.17

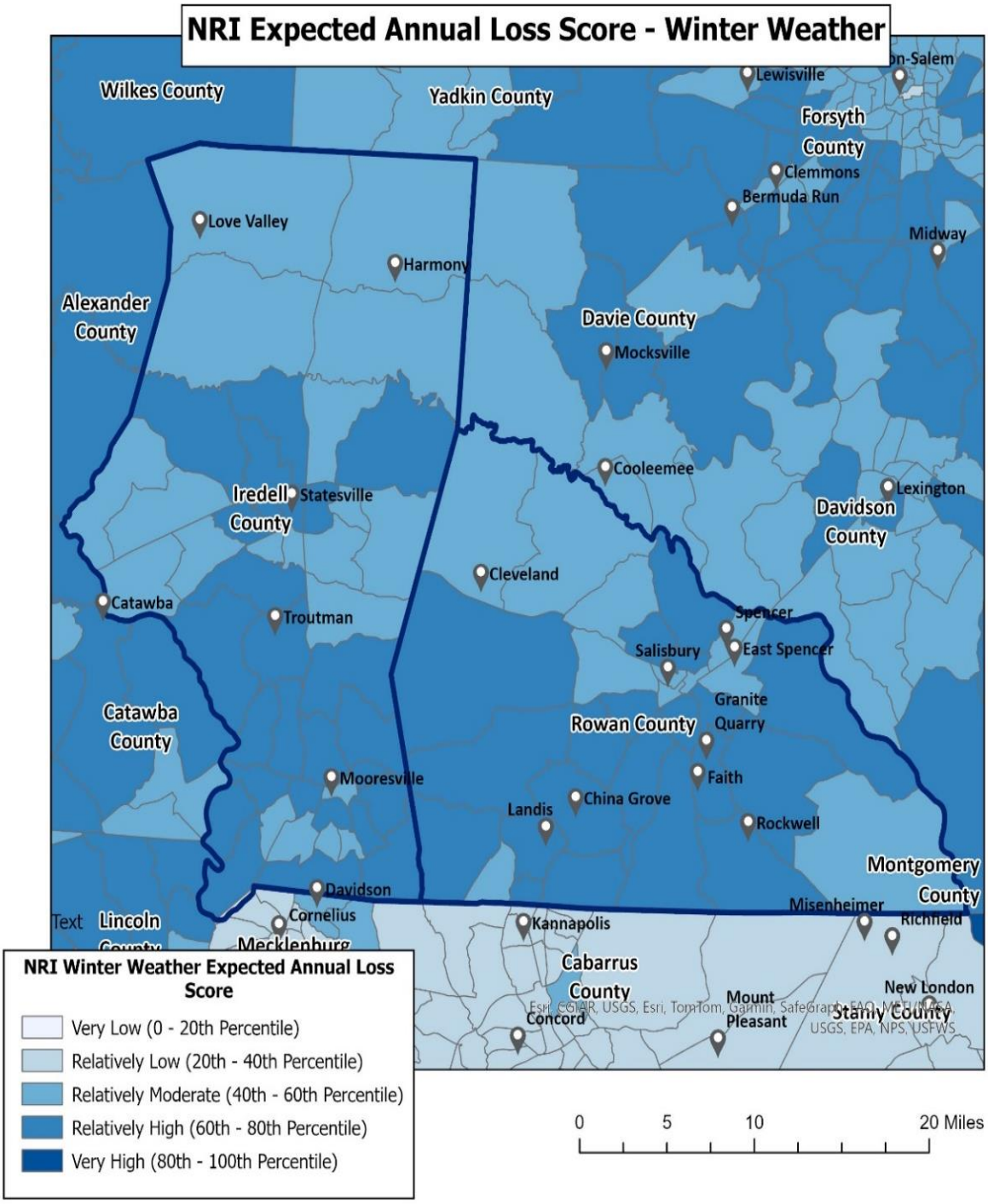


Figure 5- 69: NRI EAL Score of Winter Weather Events for the Planning area by Census Tract

Table 5- 42: NRI ice storm data by jurisdiction based on census data in each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$264,870.95	91.70	Very High	91.84	Very High	1.74
Harmony	$96,565.89	96.20	Very High	91.93	Very High	1.74
Love Valley	$13,226.08	79.64	Relatively High	91.69	Very High	1.74
Mooresville	$276,842.86	84.28	Very High	76.27	Relatively High	2.15
Statesville	$829,814.30	91.51	Very High	86.56	Very High	1.95
Troutman	$68,135.36	86.06	Very High	77.71	Relatively High	2.27
Rowan County *(Unincorporated Area)*	$25,910.11	86.21	Very High	78.03	Relatively High	2.22
China Grove	$187,681.62	95.93	Very High	92.05	Very High	1.74
Cleveland	$111,838.39	91.35	Very High	91.76	Very High	1.74
East Spencer	$147,781.62	93.26	Very High	92.21	Very High	1.72
Faith	$133,006.90	93.60	Very High	91.74	Very High	1.71
Granite Quarry	$163,640.30	93.19	Very High	91.75	Very High	1.71
Landis	$153,680.61	93.42	Very High	91.77	Very High	1.74
Rockwell	$51,579.08	95.63	Very High	92.27	Very High	1.71
Salisbury	$672,697.72	93.44	Very High	91.84	Very High	1.72
Spencer	$284,995.16	93.46	Very High	91.96	Very High	1.72

5.12.6. Winter Weather Hazard Vulnerability and Impact

All the inventoried assets in the Region are exposed to potential winter weather. Any specific vulnerabilities of individual assets would depend on individual design, building characteristics (such as a flat roof), and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk assessment but may be considered during future updates. A qualitative factor in terms of vulnerability is a general lack of awareness on the part of county residents in preparing for and responding to winter storm conditions, such as snow in a manner that will minimize the danger to themselves and others. This lack of awareness is especially apparent when driving/roadway conditions catch motorists off-guard.

Potential losses associated with winter storms include the cost of the removal of snow from roadways, debris clean-up, and some indirect losses from power outages, etc. All future structures and infrastructure in the region will be vulnerable to winter storms.

5.12.7. Future Vulnerability: Problem Statements

People

Winter weather hazards can cause many impacts for individuals who have no way to heat their homes other than with electricity by causing hypothermia and carbon monoxide poisoning. Additional danger arises when improper ventilation for kerosene heaters, blocked chimney, or furnaces creates an elevated level of carbon monoxide which leads to carbon monoxide poisoning or death. This risk disproportionately impacts elderly individuals which represents 15.8% of residents in Iredell County and 17.4% of residents in Rowan County. This can also impact those who do not have adequate telephone service in their housing unit who would have a limited ability to contact emergency services for assistance in the event of prolonged power outages or other winter weather related hazards. In Iredell County 0.9% housing units and in Rowan County 0.8% of housing units report that they do not have telephone service in their housing unit. To address these potential vulnerabilities, the planning area should consider the following mitigation actions:

- Conduct regular evaluations to ensure community members have equitable access to resources and support in winter weather hazards.
- Consider developing an educational program to inform residents on how to prevent hypothermia or carbon monoxide poisoning in the event of power outages related to winter weather events.

Changes in Development and Housing Characteristics

Iredell County has increased the number of housing units by 13.72% between 2018 and 2023 which reflects the projected population growth of 20% highlighted by the 2045 Horizon Plan. Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. Due to the increase in population and housing units, the planning area will increase the number of impervious surfaces which contribute to increased runoff and altered drainage patterns due to snow or ice melting. Higher volume of traffic with an increase in population in the planning area could create new vulnerabilities in the event of winter weather events if poorly constructed roads are damaged by heavy snow. This also includes areas where snow removal is more difficult where there could be an increase in car accidents related to snow or ice on roads. To address potential vulnerabilities, the planning area should consider the following mitigation actions:

- Include requirements for new developments to incorporate impervious surfaces and runoff control measures in new developments to direct snow or ice melt to the appropriate areas.
- Consider adding requirements of new infrastructure to withstand heavy snow and ice cover to reduce the risk of damage in the event of winter weather events.

Economy

The planning area can be impacted economically in the event of winter weather events including damage to property and infrastructure, limited transportation abilities, and lack of power. Some

businesses may be impacted depending on the length of disruption of power and limits to transportation.

Natural Environment

Snow and ice can damage trees, and the use of salt to clear ice and snow can lead to contaminated water and freshwater ecosystems. To prevent excessive damage to the natural environment, jurisdictions should consider using environmentally friendly materials to remove ice from pavements and roads.

First Responders

Winter weather events may significantly impact first responders' ability to respond to emergencies, as roads may be hazardous, and responding to emergencies with hazardous road conditions may create adverse impacts to first responders. Local services may be strained during winter weather events if new infrastructure is not designed to be resilient to winter weather hazards.

Continuity of Operations

Continuity of operations may be interrupted if roads are not cleared and where secondary roads remain uncleared preventing travel in certain areas after winter weather events. Additionally, high energy usage during cold temperatures could strain the electrical grid, leading to potential power outages. In addition, heat pumps do not work well in below freezing temperatures and heat strips significantly increase energy use.

Climate Change

The uncertainty associated with potentially changing climate conditions creates unpredictability for future severe winter storms and their accompanying snowfall. While rising global temperatures are likely to cause shorter and warmer winters in many areas, there is also the possibility that the likelihood of dangerously low temperatures may increase due to continuing trends of temperature extremes. Warmer winters, however, mean that precipitation that would normally fall as snow may begin to fall as rain or freezing rain instead. However, some global climate models predict an increase in the number of winter storms under higher emissions scenarios, but even if there were increases in the frequency or intensity of winter storms, the effects of warmer winters would nevertheless lead to decreases in average annual snowfall.

Geological Hazards

5.13.Earthquake

5.13.1. Background

An earthquake is the movement or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to

hundreds of thousands of persons and disrupt the social and economic functioning of the affected area.

Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are related to the earthquake size, distance from the fault, site, and regional geology. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (mountain regions and along hillsides), and liquefaction, in which ground soil loses the ability to resist shear and flows much like quicksand. In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture, or collapse.

Most earthquakes are caused by the release of stress accumulated because of the rupture of rocks along opposing fault planes in the Earth's outer crust. These fault planes are typically found along borders of the Earth's 10 tectonic plates. The areas of greatest tectonic instability occur at the perimeters of the slowly moving plates, as these locations are subjected to the greatest strains from plates traveling in opposite directions and at different speeds. Deformation along plate boundaries causes strain in the rock and the consequent buildup of stored energy. When the built-up stress exceeds the rocks' strength a rupture occurs. The rock on both sides of the fracture is snapped, releasing the stored energy, and producing seismic waves, generating an earthquake.

The greatest earthquake threat in the United States is along tectonic plate boundaries and seismic fault lines located in the central and western states; however, the Eastern United State does face moderate risk to less frequent, less intense earthquake events. Figure 5- 70 shows relative seismic risk for the United States.

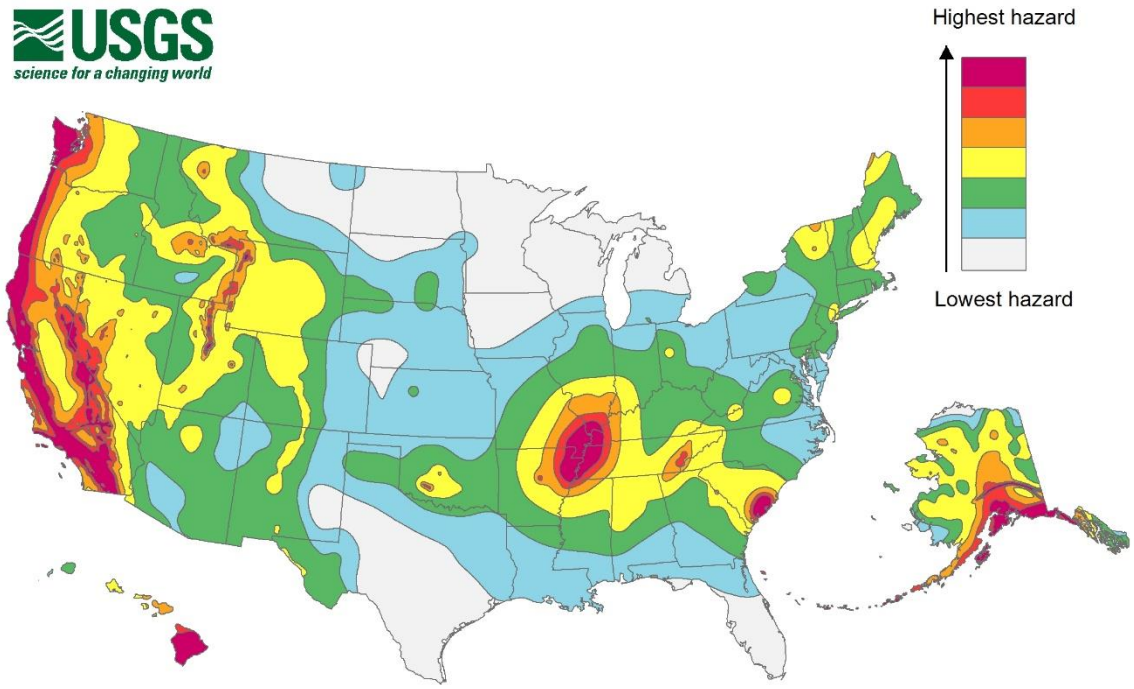


Figure 5- 70: USGS Long-Term National Seismic Hazard Map

Earthquakes are measured in terms of their magnitude and intensity. Magnitude is measured using the Richter Scale, an open-ended logarithmic scale that describes the energy release of an earthquake through a measure of shock wave amplitude (Table 5- 43). Each unit increase in magnitude on the Richter Scale corresponds to a 10-fold increase in wave amplitude, or a 32-fold increase in energy. Intensity is measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects. The scale levels are typically described using roman numerals, ranging from "I" corresponding to imperceptible (instrumental) events to "XII" for catastrophic (total destruction). A detailed description of the MMI scale of earthquake intensity and its correspondence to the Richter Scale is given in Table 5- 44.

Table 5- 43: Modified Mercalli Scale and descriptions of damage from USGS[41]

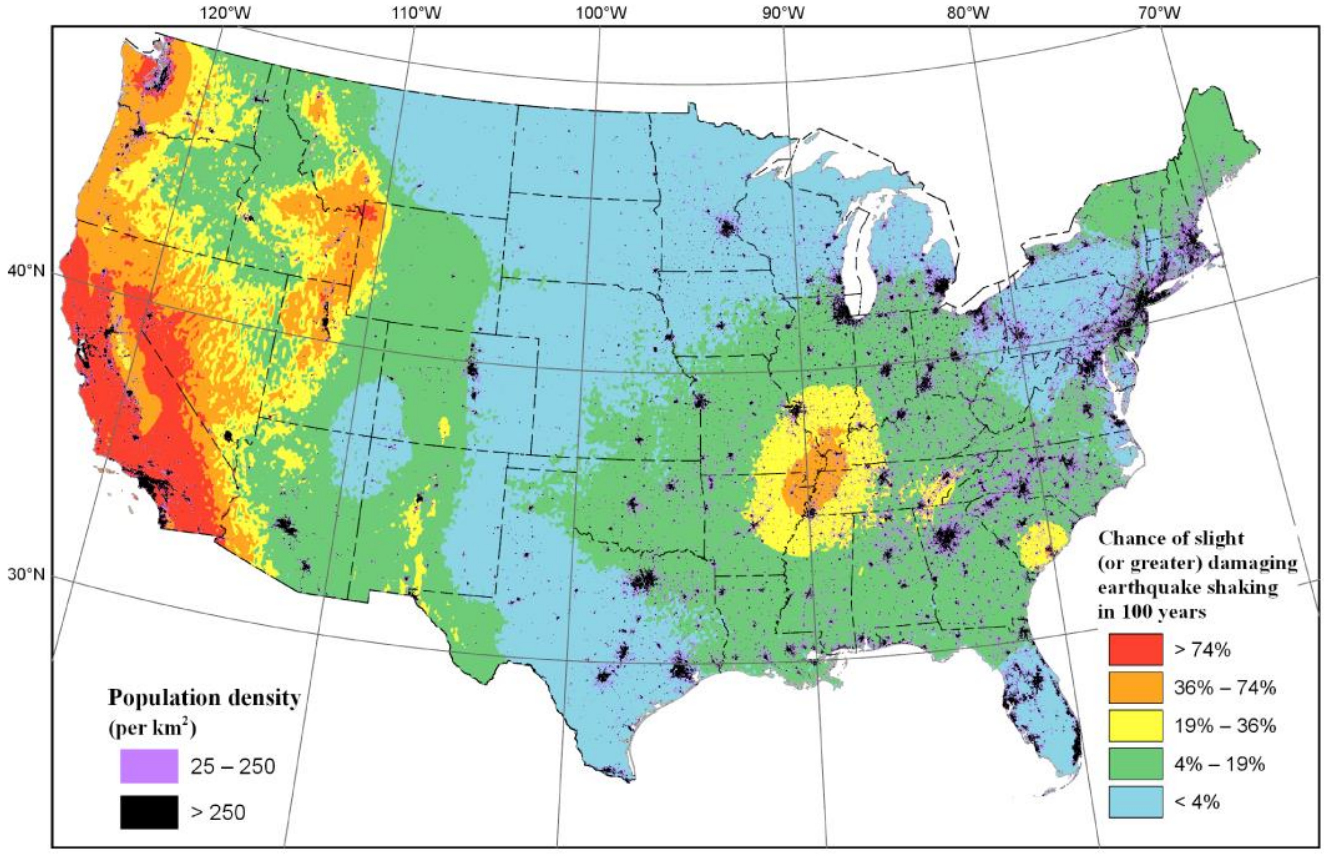
Richter Scale Equivalent	MMS Intensity	Shaking	Description/Damage
1-2	**I**	Not Felt	Not felt except by a few under especially favorable conditions
2	**II**	Weak	Felt by only a few people at rest, especially those located on upper floors of buildings during the event.
3.5	**III**	Weak	Felt quite noticeably by people indoors, especially those on upper floors of buildings during the event. Many people will not recognize it as an earthquake. Cars and vehicles may rock slightly, and standing cars/vehicles will be rocked noticeably.
4	**IV**	Light	Felt indoors by many and outdoors by a few during the day. May wake people in the impacted area at night. Dishes, windows, and doors will be disturbed, while walls will make a cracking sound. The sensation will feel like a heavy truck crashing into a building and standing cars/vehicles would be rocked noticeably.
4.6	**V**	Moderate	Felt by everyone and if the earthquake occurs at night, many people in the impacted area will be awakened. Some dishes and windows will be broken. Unstable objects will be overturned.
5	**VI**	Strong	Will be felt by all in the impacted area. Some heavy furniture may be moved and there would be a few instances of fallen plaster. Damage would be slight.
5.5	**VII**	Very Strong	Well-designed and constructed buildings would experience negligible damage. Ordinary well-built structures may experience slight to moderate damage. Considerable damage would occur to poorly built structures. Chimneys, factory stacks, columns, monuments, and walls may fall. Heavy furniture can be overturned.

[41] U.S. Geological Survey [USGS] & Earthquake Hazards Program. (n.d.). The Modified Mercalli Intensity Scale. U.S. Geological Survey. Retrieved December 18, 2024, from https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale

Richter Scale Equivalent	MMS Intensity	Shaking	Description/Damage
6	**VIII**	Severe	Damage would be slight in specially designed structures, but considerable damage would occur in ordinary substantial buildings and could potentially collapse. Damage would be great in poorly built structures and chimneys, factory stacks, columns, monuments, and walls may fall.
6.5	**IX**	Violent	Damage would be considerable in specially designed structures and damage would be great in substantial buildings with potential for partial collapse. Buildings would be potentially shifted off their foundations.
7	**X**	Extreme	Some well-built wooden structures would be destroyed, and most masonry and frame structures would be destroyed without foundations. Rails would be bent as well.
7.5	**XI**	Very Disastrous	Few buildings survive, bridges are damaged or destroyed, all services are interrupted (electrical, water, sewage, railroad), severe landslides
8	**XII**	Catastrophic	Total destruction, objects thrown into the air, river courses, and topography altered.

5.13.2. Location

Approximately two-thirds of North Carolina is subject to earthquakes, with the western and



southeast region most vulnerable to a very damaging earthquake. The state is affected by both the Charleston Fault in South Carolina and the New Madrid Fault in Tennessee. Both faults have generated earthquakes measuring greater than 8 on the Richter Scale during the last 200 years. In addition, there are several smaller fault lines throughout North Carolina.

Table 5- 51: NRI earthquake data by jurisdiction based on census tracts in each of the areas

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$101,482.62	53.53	Relatively Moderate	56.52	Relatively Moderate	0.00055
Harmony	$65,494.84	71.09	Relatively High	65.34	Relatively High	0.000745
Love Valley	$4,895.74	28.26	Relatively Low	54.66	Relatively Moderate	0.0004
Mooresville	$395,827.53	61.90	Relatively High	58.06	Relatively Moderate	0.000469
Statesville	$558,765.48	63.17	Relatively High	59.36	Relatively High	0.000599

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Troutman	$72,274.42	59.73	Relatively Moderate	52.69	Relatively Moderate	0.000427
Rowan County *(Unincorporated Area)*	$48,426.86	68.98	Relatively High	64.35	Relatively High	0.000643
China Grove	$70,944.25	61.91	Relatively High	54.47	Relatively Moderate	0.000479
Cleveland	$62,465.04	55.90	Relatively Moderate	59.91	Relatively Moderate	0.000661
East Spencer	$90,204.29	60.82	Relatively High	61.32	Relatively High	0.000651
Faith	$75,902.99	58.91	Relatively Moderate	58.13	Relatively Moderate	0.000493
Granite Quarry	$93,352.62	59.20	Relatively Moderate	59.28	Relatively Moderate	0.0005129
Landis	$64,166.14	59.30	Relatively Moderate	57.68	Relatively Moderate	0.0005870
Rockwell	$27,771.53	67.05	Relatively High	62.64	Relatively High	0.0004427
Salisbury	$357,401.18	59.24	Relatively Moderate	58.69	Relatively Moderate	0.0005019
Spencer	$190,237.73	61.32	Relatively High	61.27	Relatively High	0.0005415

Figure 5- 75: Earthquakes and known faults in and around the planning area including geological unit ages

is a map showing geological and seismic information for North Carolina.

To demonstrate the earthquake locations, the maps in Figure 5- 71, Figure 5- 72, and Figure 5- 73 depict earthquake epicenter points were downloaded from the North Carolina Department of Environmental Quality (NCDEQ). Below the points there is a probabilistic seismic hazard map which shows peak ground accelerations (PGA) for a 2% in 50-year probability. These zones are based on historic seismic activity combined with fault specific sources.

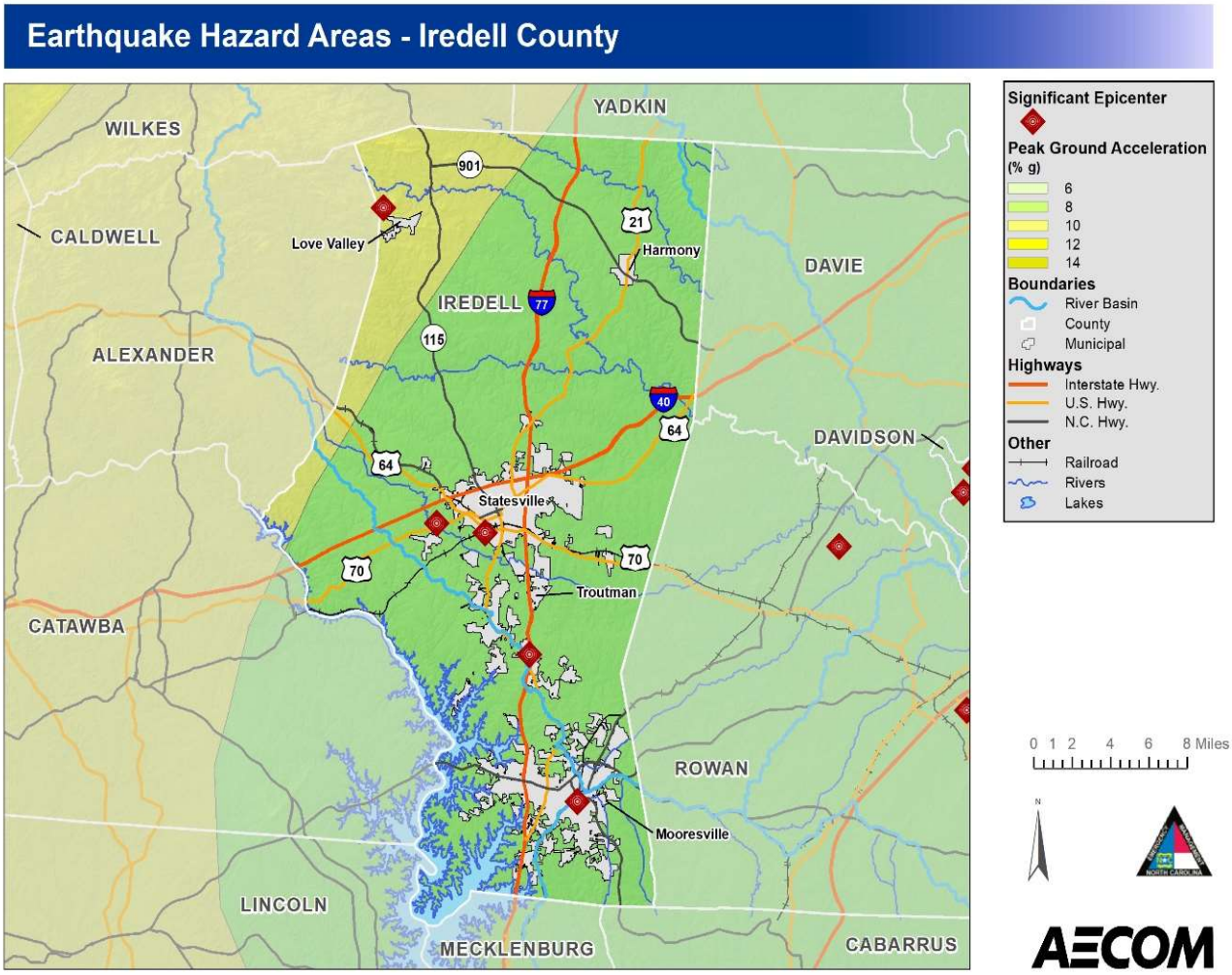


Figure 5- 71: Earthquake hazard areas in Iredell County

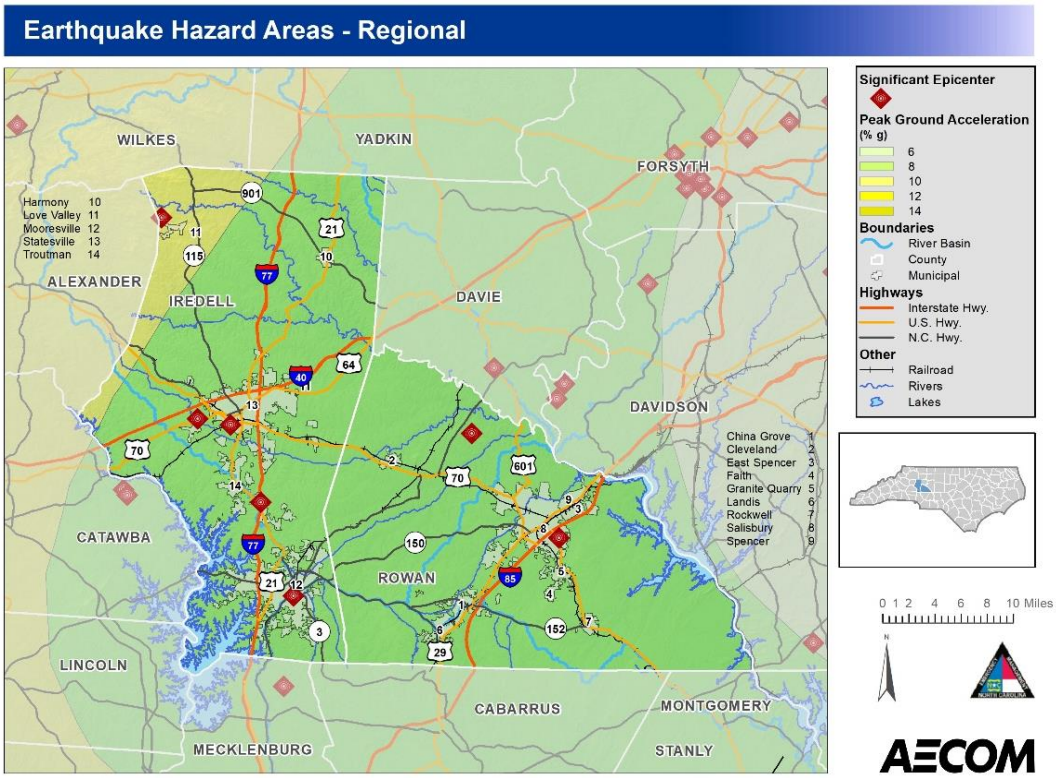


Figure 5- 72: Earthquake occurrences in the planning area

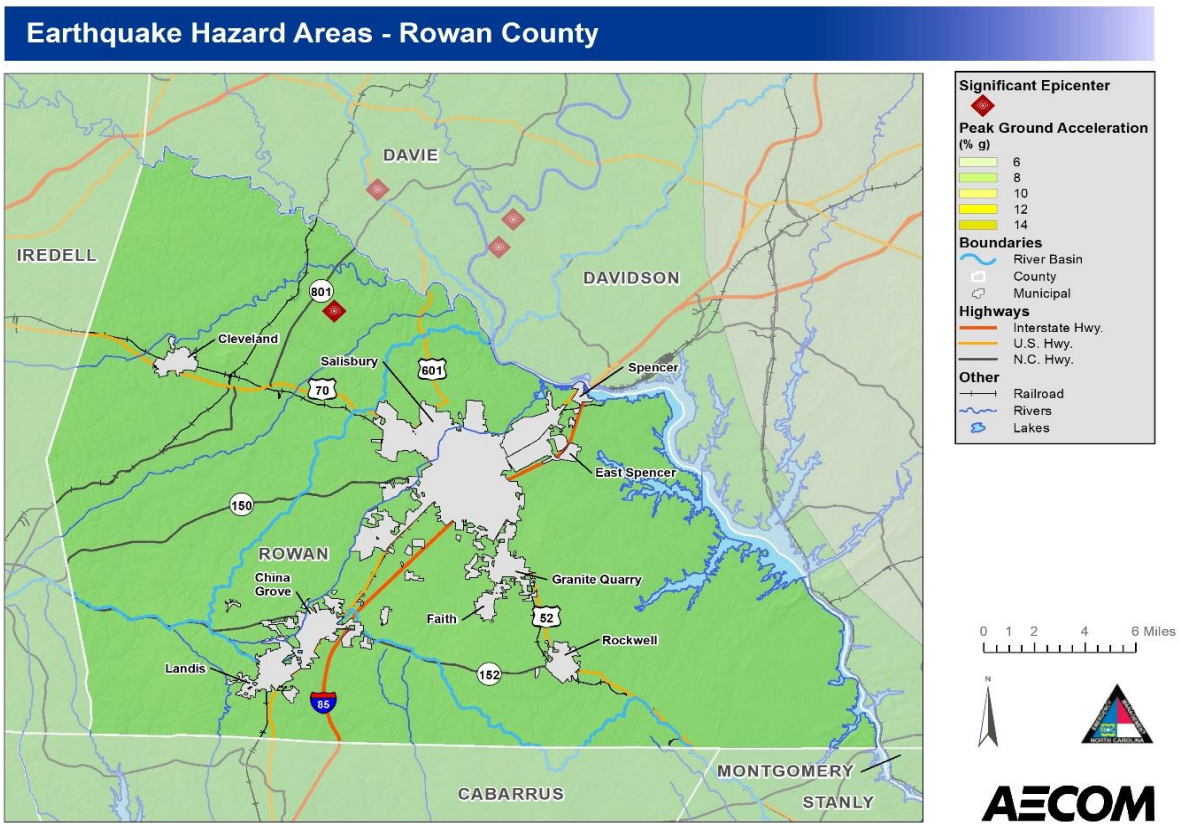


Figure 5- 73: Earthquake hazard areas in Rowan County

5.13.3. Extent

Earthquake extent can be measured by the Richter Scale and the MMI. scale. The most severe earthquake felt in the Iredell Rowan Region since the mid-1800s was a six (VI) on the MMI. This event occurred in 1886, and the effects of this magnitude earthquake typically include trees swaying, suspended objects swinging, and objects falling off shelves. Extent for all jurisdictions is depicted below in Table 5- 47. Earthquakes of greater magnitude may be possible within the Region; however, this is known to be the greatest severity currently on record.

Table 5- 44: Richter Scale[42]

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally, not felt but recorded.
3.5-5.4	Often felt but rarely causes damage.
Under 6.0	At most slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	It can be destructive in areas up to about 100 kilometers (about 62.14 mi) across where people live.
7.0-7.9	Major earthquake. It can cause severe damage to larger areas.
8 or greater	Great earthquake. It can cause severe damage in areas several hundred kilometers across.

Table 5- 45: Modified Mercalli Intensity Scale for Earthquakes[43]

Scale	Intensity	Description Of Effects	Corresponding Richter Scale Magnitude
I	Instrumental	Detected only on seismographs	
II	Feeble	Some people feel it	<4.2
III	Slight	Felt by people resting; like a truck rumbling by	
IV	Moderate	Felt by people walking	
V	Slightly Strong	Sleepers awake; church bells ring	<4.8
VI	Strong	Trees sway; suspended objects swing, objects fall off shelves	<5.4
VII	Very Strong	Mild Alarm: walls crack; plaster falls	<6.1

[42] Earthquake Hazards Program. (n.d.-a). Richter Scale. U.S. Geological Survey. https://www.usgs.gov/media/images/richterscalegif#:~:text=The%20Richter%20magnitude%20scale%20was,of%20waves%20recorded%20by%20seismographs.
[43] Earthquake Hazards Program. (n.d.). The modified Mercalli intensity scale. The Modified Mercalli Intensity Scale | U.S. Geological Survey. https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale

Scale	Intensity	Description Of Effects	Corresponding Richter Scale Magnitude
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes, and cables destroyed; general triggering of other hazards	<8.1
XII	Catastrophic	Destruction: trees fall; ground rises and falls in waves	>8.1

5.13.4. Historical Occurrences

According to the USGS Earthquake Records[44], there have been 6 earthquakes within the planning area that have occurred between 1998 and 2022. There have been an average 1.74 earthquakes and 0.956 earthquakes within Iredell and Rowan County, respectively, per year in the period of record over a 1.0 magnitude.

Table 5- 46: 20 highest magnitude earthquakes recorded within 50 miles of the planning area[45]

Date	Magnitude	Magnitude Type	Distance from Municipality (Miles)	Municipality	County
8/9/2020	5.1	mw	33.49	Love Valley	Iredell
8/31/1861	5	mfa	9.28	Love Valley	Iredell
8/6/1885	3.5	mint	36.56	Love Valley	Iredell
12/13/1879	3.3	mint	22.14	Mooresville	Iredell
6/5/1998	3.2	mb_lg	0.00	Mooresville	Iredell
10/22/1984	3.1	mb_lg	45.74	Love Valley	Iredell
12/15/2014	3	md	29.43	Love Valley	Iredell
6/3/1981	3	mblg	39.33	Love Valley	Iredell
8/25/2013	2.9	md	39.06	Love Valley	Iredell
3/22/1978	2.9		43.38	Love Valley	Iredell
8/11/2020	2.87	md	33.55	Love Valley	Iredell
10/25/2020	2.81	md	36.34	Love Valley	Iredell
4/22/1980	2.8	mb_lg	26.83	Harmony	Iredell
3/4/1981	2.8	mb_lg	37.17	Spencer	Rowan
7/12/1993	2.7	mb_lg	38.62	Spencer	Rowan
10/18/1986	2.7	md	43.17	Mooresville	Iredell
6/10/2018	2.68	md	19.66	Love Valley	Iredell
8/17/2021	2.65	md	40.13	Love Valley	Iredell

[44] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes
[45] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes

Date	Magnitude	Magnitude Type	Distance from Municipality (Miles)	Municipality	County
10/1/2020	2.63	md	38.20	Love Valley	Iredell

The largest magnitude of earthquake recorded in the planning area was measure at 3.2 and occurred in Mooresville on 6/5/1998. The strongest of these measured a V on the MMI scale. Table 5- 47 shows the earthquake records within 25 miles of the planning area detected, but most detected earthquakes between 2019 and 2023 were low enough in magnitude that it would be undetected by those who live there. Table 5- 47 shows the number of earthquakes within 50 miles of the planning area with the number of earthquakes near each jurisdiction, maximum magnitude within 50 miles of the planning area, and average magnitude of events experienced within 50 miles. To see all earthquakes that have occurred in the planning area within 50 miles, see Appendix D.

Table 5- 47: number of earthquake events, average magnitudes, minimum magnitudes, and maximum magnitudes between 1861 to 2024 within 50 miles of the planning area[46]. The minimum magnitude included in this is 1.0. It should be noted that the distribution of earthquake monitoring equipment may make it seem as if an area is more prone to earthquakes than other areas, but this may be due to the area having more monitoring stations or increased sensitivity equipment that other stations in the planning area may not.

County	Municipality	Number of Earthquakes	Maximum Magnitude	Minimum Magnitude	Average Magnitude per Event
Iredell	Harmony	2	2.8	1.49	2.15
	Love Valley	110	5.1	1	2.04
	Mooresville	10	3.3	1.4	2.25
	Statesville	14	2.35	1.24	1.77
	Troutman	2	2.26	1.8	2.03
Rowan	Landis	1	1.83	1.83	1.83
	Rockwell	5	2.58	1.6	2.07
	Salisbury	15	2.5	1.3	2.01
	Spencer	14	2.8	1.1	2.23

Table 5- 48: All Earthquake Records from 2019 to 2023 within 25 miles of the planning area

Date	Magnitude (md)*	Miles from Planning Area	Nearest County
5/6/2024	2.19	20.3	Iredell
5/13/2019	2.05	0	Rowan
4/17/2021	1.96	0	Iredell
8/16/2022	1.8	0	Iredell
5/13/2019	1.77	0	Rowan
5/13/2019	1.7	0	Rowan
2/26/2021	1.63	0.75	Iredell
5/11/2022	2.15	0.83	Iredell
5/18/2022	1.99	1.27	Iredell

[46] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes

Date	Magnitude (md)*	Miles from Planning Area	Nearest County
7/27/2021	2.13	2.22	Rowan
5/30/2022	1.77	2.55	Iredell
9/14/2019	2.37	13.68	Rowan
10/13/2019	1.69	13.92	Iredell
9/20/2020	2.05	16.55	Iredell
11/24/2021	1.66	19.98	Iredell
3/15/2020	1.94	20.75	Iredell
11/24/2021	1.99	21.43	Rowan
6/21/2021	1.62	21.5	Iredell
6/21/2021	1.81	21.62	Iredell
11/24/2021	2.33	22.27	Rowan
11/27/2021	1.88	22.58	Rowan
11/21/2021	2.41	22.65	Rowan
12/23/2018	2.35	13.61	Iredell
10/21/2018	1.62	14.3	Iredell
10/4/2018	1.88	19.41	Iredell
6/13/2018	1.69	14.2	Iredell
6/12/2018	1.76	13.12	Iredell
6/11/2018	1.98	14.92	Iredell
6/10/2018	2.68	15.74	Iredell
2/19/2018	1.5	14.25	Iredell
11/15/2017	1.84	14.07	Iredell
11/14/2017	1.54	13.59	Iredell
8/20/2017	1.72	9.67	Iredell
7/24/2016	2.35	16.52	Iredell
11/15/2015	2.58	4.83	Rowan
2/22/2015	2.26	12.32	Iredell

**Md = Based on the duration of shaking as measured by the time decay of the amplitude of the seismogram. Sometimes the only magnitude available for small events but often used (especially in the past) to compute magnitude from seismograms with "clipped" waveforms due to limited dynamic recording range of analog instrumentation, which makes it impossible to measure peak amplitudes. Computed by National Earthquake Information Center (NEIC) but only published when there is no other magnitude available.*

Table 5- 49: Earthquakes within 50 miles of the planning area from the USGS Earthquake Records[47]

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
8/9/2020	5.1	mw	4 km SE of Sparta, North Carolina	176839.6	33.49	Love Valley	Iredell
8/31/1861	5	mfa	Near Wilkesboro, North Carolina	49008.73	9.28	Love Valley	Iredell
8/6/1885	3.5	mint	Near Boone, North Carolina	193052.8	36.56	Love Valley	Iredell
12/13/1879	3.3	mint	Near Charlotte, North Carolina	116899.8	22.14	Mooresville	Iredell
6/5/1998	3.2	mb_lg	4 km SSE of Mooresville, North Carolina	0	0.00	Mooresville	Iredell
10/22/1984	3.1	mb_lg	15 km N of Boone, North Carolina	241525.2	45.74	Love Valley	Iredell
12/15/2014	3	md	13 km NNW of Cedar Rock, North Carolina	155404.4	29.43	Love Valley	Iredell
6/3/1981	3	mblg	2 km ESE of Boone, North Carolina	207680	39.33	Love Valley	Iredell
8/25/2013	2.9	md	3 km NNE of Blowing Rock, North Carolina	206219.7	39.06	Love Valley	Iredell
3/22/1978	2.9		4 km ESE of Valle Crucis, North Carolina	229047	43.38	Love Valley	Iredell
8/11/2020	2.87	md	3 km SSE of Sparta, North Carolina	177147.7	33.55	Love Valley	Iredell
10/25/2020	2.81	md	3 km ENE of Sparta, North Carolina	191886.3	36.34	Love Valley	Iredell
4/22/1980	2.8	mb_lg	9 km SE of Dobson, North Carolina	141666.4	26.83	Harmony	Iredell
3/4/1981	2.8	mb_lg	6 km E of Randleman, North Carolina	196234.6	37.17	Spencer	Rowan
7/12/1993	2.7	mb_lg	5 km SW of Greensboro, North Carolina	203911.6	38.62	Spencer	Rowan
10/18/1986	2.7	md	6 km SE of York, South Carolina	227925.7	43.17	Mooresville	Iredell
6/10/2018	2.68	md	2 km NE of Hays, North Carolina	103794.7	19.66	Love Valley	Iredell
8/17/2021	2.65	md	6 km N of Morganton, North Carolina	211872.4	40.13	Love Valley	Iredell
10/1/2020	2.63	md	16 km W of Sparta, North Carolina	201707.4	38.20	Love Valley	Iredell
8/9/2020	2.62	md	4 km SE of Sparta, North Carolina	178389.6	33.79	Love Valley	Iredell
10/17/2006	2.6	mlg	7 km S of Winston-Salem, North Carolina	122248.3	23.15	Spencer	Rowan
11/15/2015	2.58	md	10 km S of Denton, North Carolina	87165.93	16.51	Rockwell	Rowan
2/4/2021	2.56	md	1 km SSW of Sparta, North Carolina	185313.7	35.10	Love Valley	Iredell
10/3/1986	2.5	md	7 km W of Tyro, North Carolina	21166.05	4.01	Salisbury	Rowan
11/3/2006	2.5	mblg	6 km S of Winston-Salem, North Carolina	122711.9	23.24	Spencer	Rowan
3/26/2019	2.5	md	8 km E of Archdale, North Carolina	170996.4	32.39	Spencer	Rowan
6/12/2014	2.5	md	4 km NE of Blowing Rock, North Carolina	202010.4	38.26	Love Valley	Iredell
8/27/2020	2.42	md	1 km ESE of Sparta, North Carolina	185796.2	35.19	Love Valley	Iredell
11/21/2021	2.41	md	5 km SSW of Winston-Salem, North Carolina	125802.8	23.83	Salisbury	Rowan

[47] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
10/18/2006	2.4	mlg	5 km SSW of Winston-Salem, North Carolina	125002.6	23.67	Salisbury	Rowan
10/13/2020	2.4	md	9 km SW of Sparta, North Carolina	172155	32.61	Love Valley	Iredell
8/24/2014	2.4	md	4 km NE of Blowing Rock, North Carolina	200045.9	37.89	Love Valley	Iredell
9/14/2019	2.37	md	6 km E of Advance, North Carolina	77983.44	14.77	Salisbury	Rowan
8/12/2018	2.37	md	14 km NNW of Cedar Rock, North Carolina	156562.6	29.65	Love Valley	Iredell
7/24/2016	2.35	md	6 km SW of Millers Creek, North Carolina	104536.8	19.80	Love Valley	Iredell
12/23/2018	2.35	md	7 km WSW of Newton, North Carolina	105166.2	19.92	Statesville	Iredell
11/24/2021	2.33	md	6 km SW of Winston-Salem, North Carolina	124237.9	23.53	Salisbury	Rowan
8/20/2020	2.33	md	1 km E of Sparta, North Carolina	188426.2	35.69	Love Valley	Iredell
1/28/2020	2.33	md	4 km NW of Forest Oaks, North Carolina	221243.3	41.90	Spencer	Rowan
6/18/2024	2.32	md	2 km E of Sparta, North Carolina	188023.6	35.61	Love Valley	Iredell
4/21/2021	2.3	md	6 km SE of Sparta, North Carolina	172170.2	32.61	Love Valley	Iredell
8/8/2020	2.3	md	5 km SE of Sparta, North Carolina	173524.8	32.86	Love Valley	Iredell
5/3/2014	2.3	md	Virginia-North Carolina border region	199698.9	37.82	Love Valley	Iredell
3/30/2024	2.29	md	8 km W of Lowgap, North Carolina	189633.9	35.92	Love Valley	Iredell
2/22/2015	2.26	md	5 km SW of Newton, North Carolina	97711.97	18.51	Troutman	Iredell
8/9/2020	2.26	md	5 km SSE of Sparta, North Carolina	172392.4	32.65	Love Valley	Iredell
6/18/2024	2.26	md	5 km SE of Sparta, North Carolina	172688.2	32.71	Love Valley	Iredell
4/29/2019	2.25	md	6 km W of Kernersville, North Carolina	161835.2	30.65	Spencer	Rowan
8/15/2023	2.25	md	4 km WSW of McLeansville, North Carolina	245379.5	46.47	Spencer	Rowan
7/21/2024	2.22	md	13 km NNW of Cedar Rock, North Carolina	156491.5	29.64	Love Valley	Iredell
8/28/2024	2.22	md	7 km SSE of Sparta, North Carolina	168226.6	31.86	Love Valley	Iredell
7/13/2024	2.22	md	6 km SSE of Sparta, North Carolina	168975.5	32.00	Love Valley	Iredell
8/11/2020	2.22	md	3 km SSE of Sparta, North Carolina	179418.5	33.98	Love Valley	Iredell
8/10/2020	2.21	md	7 km ESE of Sparta, North Carolina	178020.8	33.72	Love Valley	Iredell
8/15/2023	2.21	md	3 km WSW of McLeansville, North Carolina	246865	46.75	Spencer	Rowan
3/31/2012	2.2	md	9 km WSW of Burnsville, North Carolina	167712.4	31.76	Rockwell	Rowan
6/17/1986	2.2	md	11 km NNE of Pageland, South Carolina	247253.5	46.83	Rockwell	Rowan
5/6/2024	2.19	md	9 km SE of Belmont, North Carolina	120337.8	22.79	Mooresville	Iredell
2/25/2021	2.19	md	4 km SSE of Sparta, North Carolina	174142.1	32.98	Love Valley	Iredell
9/23/2020	2.19	md	4 km SE of Sparta, North Carolina	178413.8	33.79	Love Valley	Iredell
6/11/2024	2.19	md	3 km NNW of Lesslie, South Carolina	219055.7	41.49	Mooresville	Iredell

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
8/9/2020	2.17	md	4 km SSE of Sparta, North Carolina	177043.8	33.53	Love Valley	Iredell
2/4/2021	2.17	md	2 km S of Sparta, North Carolina	180812.3	34.24	Love Valley	Iredell
5/11/2022	2.15	md	3 km ESE of Catawba, North Carolina	32365.11	6.13	Statesville	Iredell
8/12/2020	2.15	md	5 km S of Sparta, North Carolina	172187.6	32.61	Love Valley	Iredell
8/12/2020	2.15	md	4 km SSE of Sparta, North Carolina	174942.9	33.13	Love Valley	Iredell
8/10/2020	2.15	md	5 km SE of Sparta, North Carolina	175942.9	33.32	Love Valley	Iredell
7/27/2021	2.13	md	3 km NNE of Cooleemee, North Carolina	41188.8	7.80	Salisbury	Rowan
8/15/2020	2.13	md	3 km SSE of Sparta, North Carolina	178601	33.83	Love Valley	Iredell
5/12/2023	2.12	md	1 km NNW of Pineville, North Carolina	155216.1	29.40	Mooresville	Iredell
1/27/1987	2.1	md	6 km WNW of Tyro, North Carolina	27657.92	5.24	Salisbury	Rowan
1/18/1992	2.1	md	6 km W of High Point, North Carolina	124597.1	23.60	Spencer	Rowan
12/15/2014	2.1	md	13 km NNW of Cedar Rock, North Carolina	149737.1	28.36	Love Valley	Iredell
12/6/2016	2.09	md	14 km NNW of Cedar Rock, North Carolina	156126.6	29.57	Love Valley	Iredell
8/22/2020	2.09	md	2 km SSE of Sparta, North Carolina	181406.5	34.36	Love Valley	Iredell
6/19/2024	2.09	md	1 km ESE of Sparta, North Carolina	187786.8	35.57	Love Valley	Iredell
10/6/2019	2.08	md	12 km NNW of Cedar Rock, North Carolina	156460	29.63	Love Valley	Iredell
8/8/2020	2.08	md	4 km ESE of Sparta, North Carolina	183130.8	34.68	Love Valley	Iredell
8/2/2022	2.08	md	5 km NNE of Blowing Rock, North Carolina	202426.5	38.34	Love Valley	Iredell
3/13/2022	2.06	md	6 km SSE of Sparta, North Carolina	171374.9	32.46	Love Valley	Iredell
5/13/2019	2.05	md	5 km SSW of Cooleemee, North Carolina	22125.68	4.19	Salisbury	Rowan
9/20/2020	2.05	md	3 km WSW of Millers Creek, North Carolina	106035.9	20.08	Love Valley	Iredell
8/28/2024	2.03	md	8 km S of Sparta, North Carolina	161146.3	30.52	Love Valley	Iredell
9/13/2019	2.02	md	3 km ESE of Greensboro, North Carolina	224039	42.43	Spencer	Rowan
11/5/2021	2.01	md	8 km SSE of Sparta, North Carolina	161485.6	30.58	Love Valley	Iredell
11/27/1983	2	md	3 km NNE of Hays, North Carolina	107882.2	20.43	Love Valley	Iredell
3/4/2021	2	md	5 km SSE of Sparta, North Carolina	171228.3	32.43	Love Valley	Iredell
3/9/1990	2	md	10 km W of Gamewell, North Carolina	212898.3	40.32	Love Valley	Iredell
5/18/2022	1.99	md	3 km ESE of Catawba, North Carolina	32745.92	6.20	Statesville	Iredell
11/24/2021	1.99	md	7 km SSW of Winston-Salem, North Carolina	119633.3	22.66	Salisbury	Rowan
6/11/2018	1.98	md	1 km WSW of Hays, North Carolina	99678.21	18.88	Love Valley	Iredell
8/8/2022	1.97	md	6 km E of Archdale, North Carolina	160605.4	30.42	Spencer	Rowan
8/10/2020	1.97	md	5 km S of Sparta, North Carolina	171752.6	32.53	Love Valley	Iredell

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
10/13/2020	1.97	md	8 km SW of Sparta, North Carolina	178055.7	33.72	Love Valley	Iredell
4/17/2021	1.96	md	5 km W of Statesville, North Carolina	2776.142	0.53	Statesville	Iredell
8/9/2020	1.96	md	6 km SSE of Sparta, North Carolina	169750.8	32.15	Love Valley	Iredell
8/21/2020	1.96	md	5 km NNE of Lesslie, South Carolina	212763	40.30	Mooresville	Iredell
3/15/2020	1.94	md	9 km NNW of Millers Creek, North Carolina	129674.8	24.56	Love Valley	Iredell
4/28/2021	1.94	md	5 km ESE of Sparta, North Carolina	178662	33.84	Love Valley	Iredell
3/11/2022	1.94	md	2 km S of Sparta, North Carolina	182930.4	34.65	Love Valley	Iredell
8/31/2020	1.94	md	9 km ESE of Lowgap, North Carolina	194462.2	36.83	Love Valley	Iredell
8/10/2020	1.89	md	4 km SSE of Sparta, North Carolina	176889.6	33.50	Love Valley	Iredell
8/26/2020	1.89	md	2 km SSE of Sparta, North Carolina	182893.6	34.64	Love Valley	Iredell
8/21/2020	1.89	md	1 km SE of Sparta, North Carolina	186211.6	35.27	Love Valley	Iredell
10/4/2018	1.88	md	5 km ESE of Cedar Rock, North Carolina	118414.9	22.43	Love Valley	Iredell
11/27/2021	1.88	md	5 km SW of Winston-Salem, North Carolina	125795.1	23.82	Salisbury	Rowan
6/9/2021	1.88	md	3 km ESE of Sparta, North Carolina	183112.8	34.68	Love Valley	Iredell
11/15/2017	1.84	md	7 km WSW of Newton, North Carolina	107373	20.34	Statesville	Iredell
10/6/2019	1.83	md	4 km ESE of Hemby Bridge, North Carolina	159301.3	30.17	Landis	Rowan
8/8/2020	1.83	md	4 km SSW of Sparta, North Carolina	175137	33.17	Love Valley	Iredell
8/8/2020	1.83	md	3 km S of Sparta, North Carolina	179018.3	33.90	Love Valley	Iredell
3/26/2020	1.82	md	2 km NNW of Kernersville, North Carolina	177909.8	33.70	Spencer	Rowan
6/21/2021	1.81	md	10 km NNW of Hays, North Carolina	135018.9	25.57	Love Valley	Iredell
8/16/2022	1.8	md	3 km SE of Troutman, North Carolina	289.5535	0.05	Troutman	Iredell
8/14/1999	1.8	md	17 km SW of Sparta, North Carolina	162709.3	30.82	Love Valley	Iredell
8/9/2020	1.8	md	8 km S of Sparta, North Carolina	163085.8	30.89	Love Valley	Iredell
2/9/2021	1.79	md	6 km SE of Sparta, North Carolina	171395.2	32.46	Love Valley	Iredell
8/31/2020	1.78	md	3 km S of Sparta, North Carolina	177566.7	33.63	Love Valley	Iredell
10/13/2020	1.78	md	6 km SW of Sparta, North Carolina	179873	34.07	Love Valley	Iredell
5/13/2019	1.77	md	2 km S of Cooleemee, North Carolina	28112.43	5.32	Salisbury	Rowan
5/30/2022	1.77	md	North Carolina	47107.61	8.92	Statesville	Iredell
8/23/2021	1.77	md	4 km SSE of Sparta, North Carolina	174245.5	33.00	Love Valley	Iredell
1/28/2023	1.77	md	9 km SSE of West Jefferson, North Carolina	182834.7	34.63	Love Valley	Iredell
2/2/2022	1.77	md	4 km ESE of Lilesville, North Carolina	253732.2	48.06	Rockwell	Rowan
6/12/2018	1.76	md	North Carolina	102548.7	19.42	Statesville	Iredell

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
4/20/2021	1.74	md	2 km SE of Sparta, North Carolina	181628.3	34.40	Love Valley	Iredell
10/31/2020	1.73	md	Virginia-North Carolina border region	186092.3	35.24	Love Valley	Iredell
8/20/2017	1.72	md	6 km NNE of Mount Holly, North Carolina	70660.57	13.38	Mooresville	Iredell
8/9/2020	1.72	md	Virginia-North Carolina border region	181006.8	34.28	Love Valley	Iredell
9/25/2024	1.71	md	5 km W of Jaars, North Carolina	238005.6	45.08	Mooresville	Iredell
5/13/2019	1.7	md	4 km S of Cooleemee, North Carolina	23923.85	4.53	Salisbury	Rowan
11/17/2001	1.7	md	8 km E of Lansing, North Carolina	226259.7	42.85	Love Valley	Iredell
10/13/2019	1.69	md	6 km ESE of Mountain View, North Carolina	107900	20.44	Statesville	Iredell
6/13/2018	1.69	md	6 km ESE of Mountain View, North Carolina	109412.5	20.72	Statesville	Iredell
11/24/2021	1.66	md	7 km E of Lewisville, North Carolina	131728.1	24.95	Salisbury	Rowan
7/30/2021	1.65	md	7 km SSE of Sparta, North Carolina	168399.8	31.89	Love Valley	Iredell
8/13/2020	1.65	md	4 km ENE of Sparta, North Carolina	190388.6	36.06	Love Valley	Iredell
2/26/2021	1.63	md	2 km N of Catawba, North Carolina	34491.42	6.53	Statesville	Iredell
10/21/2018	1.62	md	3 km SSE of Brookford, North Carolina	111952.9	21.20	Statesville	Iredell
6/21/2021	1.62	md	10 km NNW of Hays, North Carolina	134377.5	25.45	Love Valley	Iredell
8/17/2020	1.62	md	4 km SE of Sparta, North Carolina	176762.6	33.48	Love Valley	Iredell
11/9/2020	1.62	md	4 km ESE of Sparta, North Carolina	179864.2	34.07	Love Valley	Iredell
12/4/1983	1.6	md	13 km SE of Denton, North Carolina	118410.4	22.43	Rockwell	Rowan
11/14/2017	1.54	md	5 km SE of Brookford, North Carolina	107073.7	20.28	Statesville	Iredell
8/20/2020	1.54	md	3 km SE of Sparta, North Carolina	180481.2	34.18	Love Valley	Iredell
2/27/2021	1.53	md	Virginia-North Carolina border region	171560.9	32.49	Love Valley	Iredell
11/7/2020	1.51	md	2 km ENE of Sparta, North Carolina	191612.8	36.29	Love Valley	Iredell
2/19/2018	1.5	md	3 km SSE of Brookford, North Carolina	111990.3	21.21	Statesville	Iredell
10/17/2006	1.5	mlg	5 km WSW of Winston-Salem, North Carolina	132450.8	25.09	Salisbury	Rowan
3/31/2024	1.5	ml	8 km W of Lowgap, North Carolina	191272.4	36.23	Love Valley	Iredell
11/25/2021	1.49	md	6 km SE of East Bend, North Carolina	115902.7	21.95	Harmony	Iredell
10/25/2020	1.48	md	3 km E of Sparta, North Carolina	186633.2	35.35	Love Valley	Iredell
8/23/2021	1.46	md	3 km SSE of Sparta, North Carolina	179076.3	33.92	Love Valley	Iredell
4/2/1978	1.4	md	2 km SE of Maiden, North Carolina	80510.96	15.25	Mooresville	Iredell
8/12/2020	1.4	md	4 km SSE of Sparta, North Carolina	175635.9	33.26	Love Valley	Iredell
10/13/2020	1.38	md	7 km SW of Sparta, North Carolina	180242.6	34.14	Love Valley	Iredell
8/30/2020	1.33	md	3 km SE of Sparta, North Carolina	179599.6	34.02	Love Valley	Iredell

Date	Magnitude	Magnitude Type*	Description of Earthquake Location	Distance between Earthquake and nearest Municipality		Nearest Municipality	Nearest County
				Feet	Miles		
11/10/2020	1.32	md	4 km SE of Sparta, North Carolina	178929.5	33.89	Love Valley	Iredell
10/18/2006	1.3	md	5 km W of Winston-Salem, North Carolina	137807.7	26.10	Salisbury	Rowan
11/22/2020	1.3	ml	4 km SE of Sparta, North Carolina	179787	34.05	Love Valley	Iredell
2/22/1990	1.3	md	10 km SW of West Jefferson, North Carolina	217138.2	41.12	Love Valley	Iredell
10/13/2020	1.27	md	7 km SW of Sparta, North Carolina	178253	33.76	Love Valley	Iredell
11/6/2020	1.27	md	1 km E of Sparta, North Carolina	188309.7	35.66	Love Valley	Iredell
1/10/2023	1.24	md	6 km SE of Mountain View, North Carolina	109826.4	20.80	Statesville	Iredell
8/23/2020	1.24	md	2 km ESE of Sparta, North Carolina	186852.6	35.39	Love Valley	Iredell
10/31/2020	1.22	md	3 km ENE of Sparta, North Carolina	190601.9	36.10	Love Valley	Iredell
11/5/2020	1.18	md	3 km ENE of Sparta, North Carolina	192378.8	36.44	Love Valley	Iredell
11/9/2020	1.15	md	4 km ESE of Sparta, North Carolina	179525	34.00	Love Valley	Iredell
10/31/2020	1.14	md	4 km E of Sparta, North Carolina	189772.4	35.94	Love Valley	Iredell
8/31/1989	1.1	md	5 km N of Spencer, North Carolina	7413.5	1.40	Spencer	Rowan
10/28/2020	1.03	md	0 km SSW of Sparta, North Carolina	187898.9	35.59	Love Valley	Iredell
8/24/2020	1.02	md	1 km NW of Sparta, North Carolina	195487.3	37.02	Love Valley	Iredell
10/8/1989	1	md	15 km N of Mulberry, North Carolina	152048.8	28.80	Love Valley	Iredell

* **Mb_lg/Mblg/MLg** = A magnitude for regional earthquakes based on the amplitude of the Lg surface waves as recorded on short-period instruments.
Md = Based on the duration of shaking as measured by the time decay of the amplitude of the seismogram. Sometimes the only magnitude available for very small events, but often used (especially in the past) to compute magnitude from seismograms with "clipped" waveforms due to limited dynamic recording range of analog instrumentation, which makes it impossible to measure peak amplitudes. Computed by NEIC but only published when there is no other magnitude available.
Mfa = An estimate of body-wave (mb) magnitude based on the size of the area over which the earthquake was felt, typically assigned to widely felt earthquakes that occurred before the invention of seismographs and to earthquakes occurring in the early decades of seismograph deployment for which magnitudes calculated from seismographic data are not available.
Mint = A magnitude estimated from the maximum reported intensity, typically for earthquakes occurring before seismic instruments were in general use. This has been used for events where the felt reports were from too few places to use a magnitude determined from a felt area.
Ml = The original magnitude relationship defined by Richter and Gutenberg in 1935 for local earthquakes. It is based on the maximum amplitude of a seismogram recorded on a Wood-Anderson torsion seismograph.
Mww, Mw = Derived from a centroid moment tensor inversion of the W-phase (~50-2000 s; pass band based on size of EQ). Computed for all M5.0 or larger earthquakes worldwide, but generally robust for all M5.5 worldwide. Provides consistent results to M~4.5 within a regional network of high-quality broadband stations. Authoritative USGS magnitude if computed.[48]

[48] U.S. Geological Survey. (n.d.-b). Magnitude Types. USGS Earthquake Hazards Program. Retrieved June 27, 2024, from https://www.usgs.gov/programs/earthquake-hazards/magnitude-types

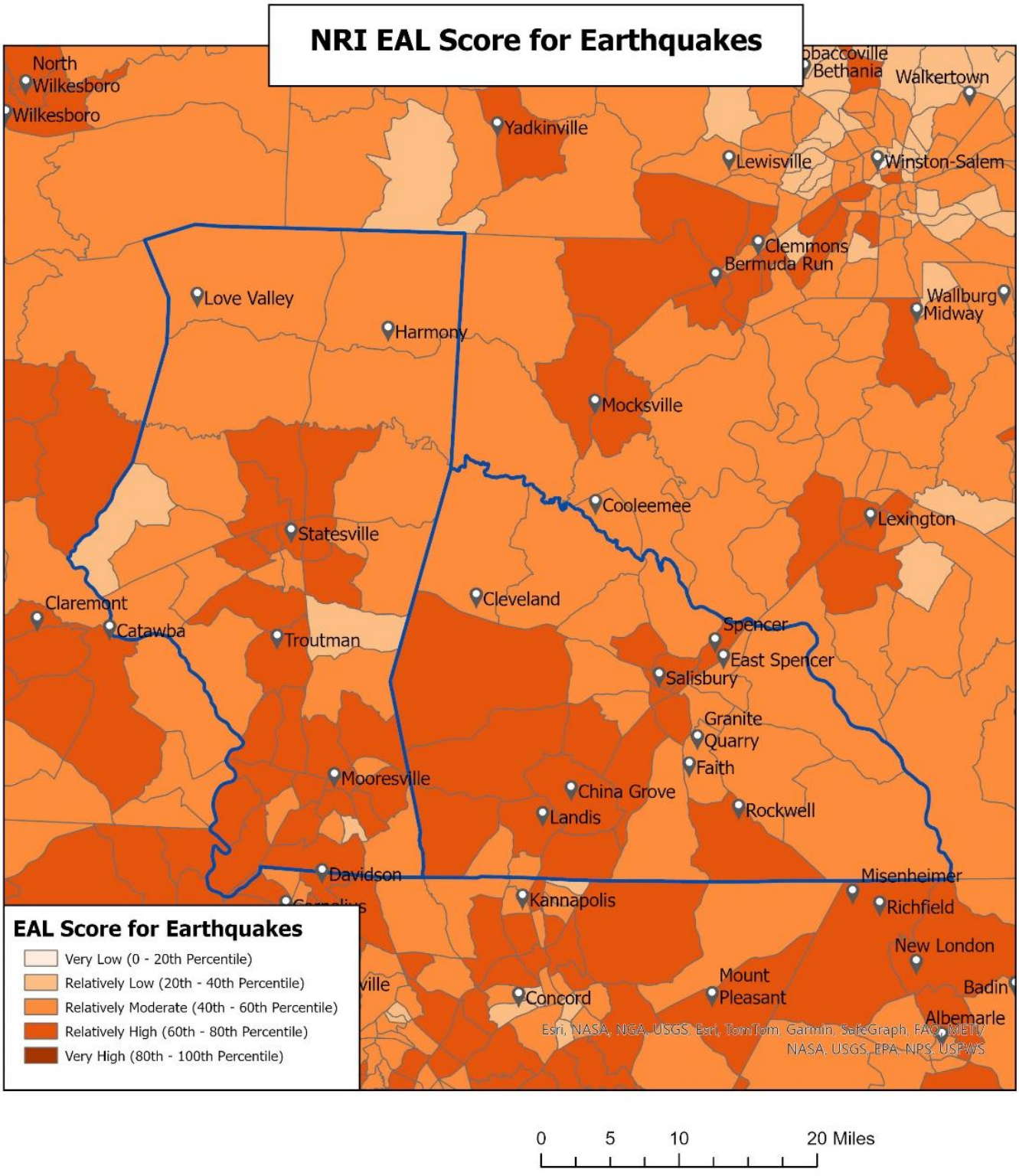


Figure 5- 74: NRI Expected Annual Loss Score for Earthquakes in the planning area by census tract

5.13.5. Probability of Future Occurrences

According to the NRI, there is a 0.051% chance of earthquakes in Iredell County per year and a 0.046% chance of earthquakes in Rowan County per year. The EAL if an earthquake does occur is expected to be $1,100,000 in Iredell County and $714,000 in Rowan County, and when compared to similar communities the risk index rating for both counties is considered low. For more information about NRI earthquake risk by census tract, see Appendix K., and for more information about the location of faults and previous earthquakes, see Figure 5- 75. The NRI utilizes data from the HAZUS Estimated Annualized Earthquake Losses for the United States to determine risk and expected impacts from earthquakes.

Table 5- 50: NRI Risk Values for Earthquakes in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Relatively Low	Relatively Low
	Value	$1,100,000	$714,000
	Frequency	0.051% Chance Per Year	0.046% Chance Per Year
Risk Index	Rating	Relatively Low	Relatively Low
	Score	81.8	79
Historic Loss Ratio		Relatively Moderate	Relatively Low

Table 5- 51: NRI earthquake data by jurisdiction based on census tracts in each of the areas

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$101,482.62	53.53	Relatively Moderate	56.52	Relatively Moderate	0.00055
Harmony	$65,494.84	71.09	Relatively High	65.34	Relatively High	0.000745
Love Valley	$4,895.74	28.26	Relatively Low	54.66	Relatively Moderate	0.0004
Mooresville	$395,827.53	61.90	Relatively High	58.06	Relatively Moderate	0.000469
Statesville	$558,765.48	63.17	Relatively High	59.36	Relatively High	0.000599
Troutman	$72,274.42	59.73	Relatively Moderate	52.69	Relatively Moderate	0.000427
Rowan County *(Unincorporated Area)*	$48,426.86	68.98	Relatively High	64.35	Relatively High	0.000643
China Grove	$70,944.25	61.91	Relatively High	54.47	Relatively Moderate	0.000479
Cleveland	$62,465.04	55.90	Relatively Moderate	59.91	Relatively Moderate	0.000661
East Spencer	$90,204.29	60.82	Relatively High	61.32	Relatively High	0.000651
Faith	$75,902.99	58.91	Relatively Moderate	58.13	Relatively Moderate	0.000493

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Granite Quarry	$93,352.62	59.20	Relatively Moderate	59.28	Relatively Moderate	0.0005129
Landis	$64,166.14	59.30	Relatively Moderate	57.68	Relatively Moderate	0.0005870
Rockwell	$27,771.53	67.05	Relatively High	62.64	Relatively High	0.0004427
Salisbury	$357,401.18	59.24	Relatively Moderate	58.69	Relatively Moderate	0.0005019
Spencer	$190,237.73	61.32	Relatively High	61.27	Relatively High	0.0005415

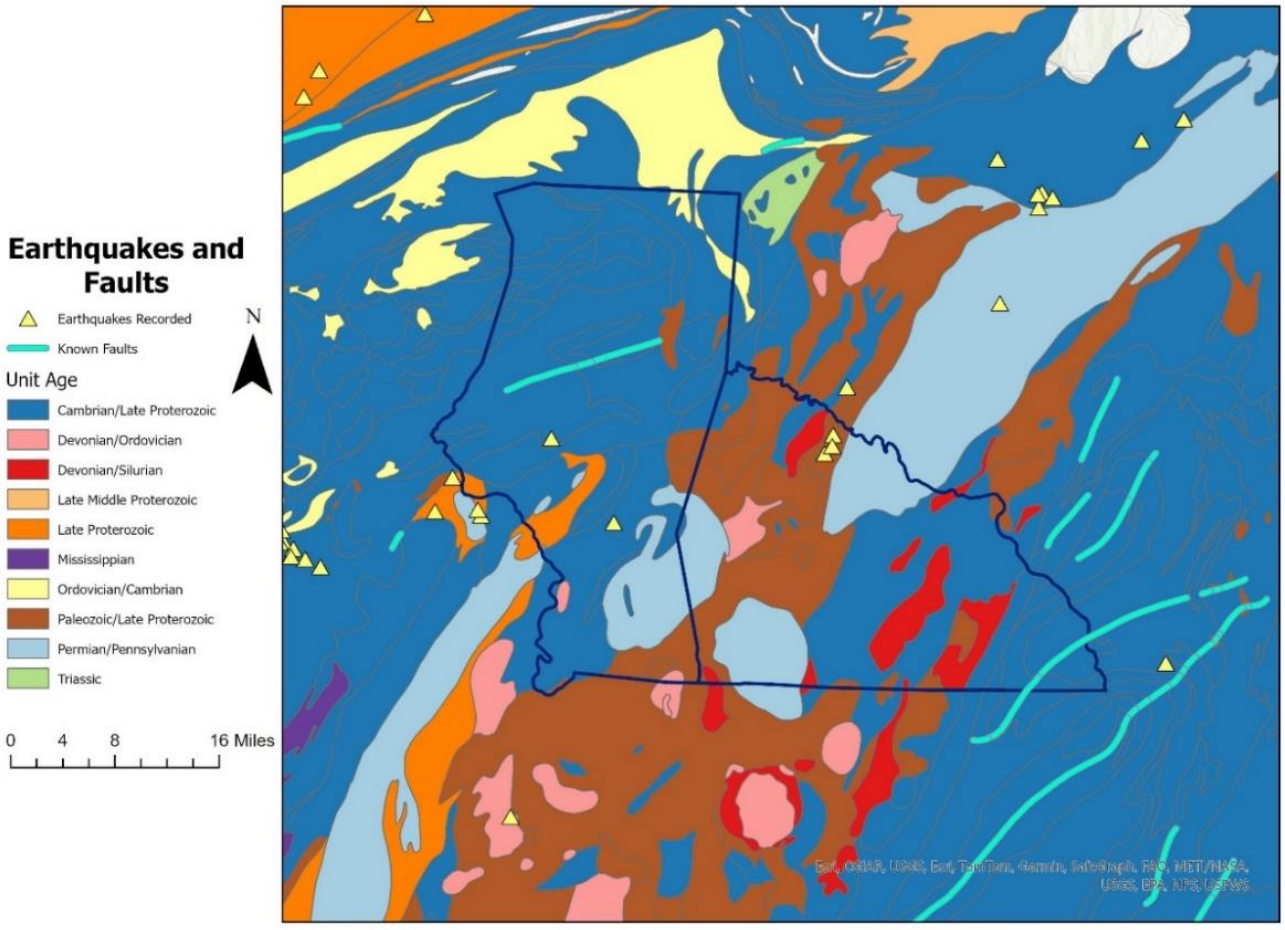


Figure 5- 75: Earthquakes[49] and known faults[50] in and around the planning area including geological unit ages[51]

[49] U.S. Geological Survey. (n.d.-a). Earthquake Catalog [Dataset]. In USGS Earthquake Hazards Program. USGS. https://earthquake.usgs.gov/earthquakes/search/

[50] U.S. Geological Survey & New Mexico Bureau of Mines. (n.d.). Quaternary Fault and Fold Database of the United States [Dataset]. US Geological Survey. https://www.usgs.gov/programs/earthquake-hazards/faults

[51] NC Department of Environmental Quality. (1985). *Geological Map of North Carolina*. https://www.deq.nc.gov/about/divisions/energy-mineral-and-land-resources/north-carolina-geological-survey/ncgs-publications/statewide-geologic-maps-north-carolina

5.13.6. Earthquake Hazard Vulnerability and Impact

Vulnerability for earthquakes for the area is considered, in relative terms, to be limited should a significant earthquake event occur. Appendix D provides loss estimates for the 500-, 1,000- and 2,500- year return periods based on probabilistic scenarios. Loss data was provided by NCEM's Integrated Hazard Risk Management (IHRM) Program. These estimates include structural, contents and inventory losses for agricultural, commercial, education, government, industrial, religious, and residential building occupancy types.

FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from an event. These loss estimates do not include income losses, such as lost wages, rental expenses, relocation costs, etc. that can occur following an earthquake. All future structures and infrastructure built in the Region will be vulnerable to seismic events and may also experience damage not accounted for in these estimated losses. FEMA considers loss ratios greater than 10% to be significant and an indicator a community may have more difficulties recovering from an event. These loss estimates do not include income losses, such as lost wages, rental expenses, relocation costs, etc. that can occur following an earthquake. All future structures and infrastructure built in the Region will be vulnerable to seismic events and may also experience damage not accounted for in these estimated losses.

Earthquakes in the region are not high impact events that cause injury or death. The public may typically experience some shaking at these events and the greatest threat to health and well-being is often from objects falling from shelves. Economic losses associated with an earthquake include property damage, business interruption costs, and costs to repair damaged utilities and infrastructure. Historically, there have been no economic losses associated with earthquakes in the Region.

For more information about people, buildings, and high loss buildings at risk of earthquake damages, please visit Appendix D.

5.13.7. Future Vulnerability: Problem Statement

People

Because the planning area has a low expected annual loss rating, it is unlikely that a earthquake would occur in the planning area that would result in significant injury or death. However, earthquakes can damage power lines, sewer lines, waterlines, and gas pipelines, leading to an increased risk of fires, explosions, gas leaks, and disruption of utilities.

Warning systems are important, such as reverse 911 systems, to alert residents to take shelter in an earthquake. In Iredell County 0.9% and in Rowan County 0.8% of households report that they do not have telephone service in their housing unit. This would create a significant barrier to receiving emergency alerts in areas where individuals may be trapped or unable to receive assistance in the event of a earthquake. As a result, the planning area should consider working

with local telephone and internet providers to expand service to increase access to critical emergency alerts.

Economy

Earthquakes can damage homes, properties, buildings, and infrastructure in the areas that are impacted. This could strain the economy in the planning area due to loss of income, damage due to loss of customers, expenses for immediate recovery, and potential displacement in the planning area.

Changes in Development or Housing Characteristics

There is no expected increase in vulnerability expected due to increased development or housing. Although increased development in the planning area means that in the case of an earthquake event there may be more structures damaged by earthquake impacts.

Natural Environment

Earthquakes can create ground failure, cause landslides, disrupt ecosystems, increase erosion, causing potential chemical spills or leaks, and altering natural habitats.

First Responders

Earthquakes can deteriorate the structural integrity of buildings, infrastructure, and facilities in the planning area. First responders who enter unstable structures are at an increased risk of severe injury or death unless specialized training occurs to prevent injury when responding to emergencies after an earthquake event. Earthquakes can also impact the roads, utilities, infrastructure, and emergency response facilities needed to respond to emergencies created by earthquakes. The planning area should review emergency response procedures regularly to update the responsibilities, areas that are at risk, and protocol for earthquake events.

Continuity of Operations

Earthquakes have the potential to disrupt utilities, damage infrastructure, and damage buildings which would prevent normal operations. Because earthquakes also could disrupt power lines, sewer lines, water lines, and gas pipelines, the facilities that are impacted would experience reduced availability of utilities which would prevent normal operations.

Climate Change

Recent studies have suggested that climate change may cause more earthquakes by increasing the weight of water on the earth’s crust and destabilizing cracks and faults, leading to more seismic activity. However, this is only assumed to be a potential issue in areas that are more seismically volatile than the southeastern USA, and it is unlikely to impact the planning area. Neither the current North Carolina State HMP nor the North Carolina Climate Science Report consider that climate change may increase the probability of earthquakes in the State.

Appendix D contains detailed information about the value of buildings, population, and high-risk buildings at risk of earthquake impacts and Appendix K contains detailed information about census tract level NRI earthquake data.

5.14. Landslide

5.14.1. Background

A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation, which is driven by gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melting, steepening of slopes due to construction or erosion, earthquakes, volcanic eruptions, and changes in groundwater levels.

There are several types of landslides: rock falls, rock topple, slides, and flows. Rock falls are rapid movements of bedrock, which result in bouncing or rolling. A topple is a section or block of rock that rotates or tilts before falling to the slope below. Slides are movements of soil or rock along a distinct surface of rupture, which separates the slide material from the more stable underlying material. Mudflows, sometimes referred to as mudslides, mudflows, lahars, or debris avalanches, are fast-moving rivers of rock, earth, and other debris saturated with water. They develop when water rapidly accumulates in the ground, such as heavy rainfall or rapid snowmelt, changing the soil into a flowing river of mud or “slurry.” Slurry can flow rapidly down slopes or through channels and can strike with little or no warning at avalanche speeds. Slurry can travel several miles from its source, growing as it picks up trees, cars, and other materials along the way. As the flows reach flatter ground, the mudflow spreads over a broad area where it can accumulate in thick deposits.

Landslides are typically associated with periods of heavy rainfall or rapid snow melting and tend to worsen the effects of flooding that often accompanies these events. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides. Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly.

Among the most destructive types of debris flows are those that accompany volcanic eruptions. A spectacular example in the United States was a massive debris flow resulting from the 1980 eruptions of Mount St. Helens, Washington. Areas near the bases of many volcanoes in the Cascade Mountain Range of California, Oregon, and Washington are at risk from the same types of flows during future volcanic eruptions.

Areas prone to landslide hazards include previous landslide areas, the bases of steep slopes, drainage channels, and developed hillsides where leach-field septic systems are used. Areas that are typically considered safe from landslides include areas that have not moved in the past, flat-lying areas away from sudden changes in slope, and areas at the top or along ridges set back from the tops of slopes.

According to the United States Geological Survey, each year landslides cause $5.1 billion (about $16 per person in the US) (2009 USD) in damage and between 25 and 50 deaths in the

United States[52]. Figure 5- 76 delineates areas where large numbers of landslides have occurred and areas that are susceptible to landslide in the conterminous United States.

5.14.2. Location

Landslides occur along steep slopes when the pull of gravity can no longer be resisted (often due to heavy rain throughout the region). Human development can also exacerbate risk by building on previously undevelopable steep slopes and constructing roads by cutting through mountains. Landslides are possible throughout the Iredell Rowan Region. According to the figures below, two small portions of the region, both in Iredell County, have moderate and high potential for landslide activity. The remaining portion of the region, including all of Rowan County, has a low potential for incidence occurrence rate. There is moderate to high susceptibility throughout the region.

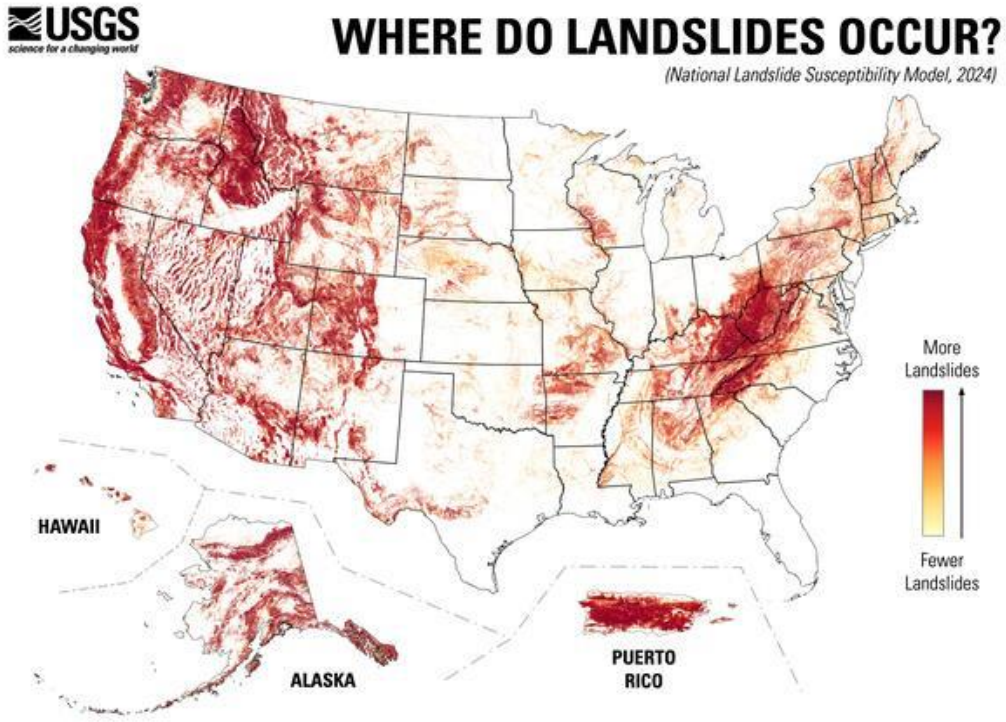


Figure 5- 76: Landslide Susceptibility Model 2024 USGS[53]

5.14.3. Extent

Landslide data is provided from United States Geological Survey (USGS). The magnitude and severity of landslides can vary depending on terrain and other highly localized factors. There were no reported landslides in the Region and all its jurisdictions. A mitigation strategy regarding

[52] United States Geological Survey (USGS). United States Department of the Interior. “Landslide Hazards – A National Threat.” 2005.
[53] U.S. Landslide Inventory and Susceptibility Map | U.S. Geological Survey. (2024, March 5). https://www.usgs.gov/tools/us-landslide-inventory-and-susceptibility-map

landslide identification and mapping will be considered in future mitigation actions for the Region.

5.14.4. Historical Occurrences

Some areas of steep topography in the Iredell Rowan Region make the planning area susceptible to landslides. Most landslides are caused by heavy rainfall in the area. Building on steep slopes that were not previously possible also contributes to risk. Some incidence mapping has also been completed throughout western North Carolina, though it is not complete. There are currently no reported landslides in Iredell County or Rowan County, but it should be noted that there may be unreported incidents in the planning area that have occurred.

5.14.5. Landslide Hazard Vulnerability and Impact

Sufficient hazard information is not available to conduct a detailed vulnerability assessment. In addition, any specific vulnerability of individual assets would depend on individual design, building characteristics, and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk assessment but may be considered during future updates. Mitigation strategy regarding landslide identification and mapping will be considered in future mitigation actions for the Region.

5.14.6. Probability of Future Occurrence

The NRI uses landslide data from 2010 to 2021 to determine risk and expected impacts. The NRI reports that there are 0 expected landslide events per year in the planning area, but if a landslide occurred, the planning area would expect to experience moderate losses compared to other counties. For more information about NRI Landslide data by census tract, see Appendix K.

Table 5- 52: NRI Risk Values for Landslides in Iredell and Rowan Counties

NRI		Iredell	Rowan
EAL	Rating	Relatively Moderate	Relatively Moderate
	Value	$122,000	$122,000
	Frequency	0 Events Per Year	0 Events Per Year
Risk Index	Rating	Relatively Moderate	Relatively Moderate
	Score	82	88.6
Historic Loss Ratio		Relatively Low	Very Low

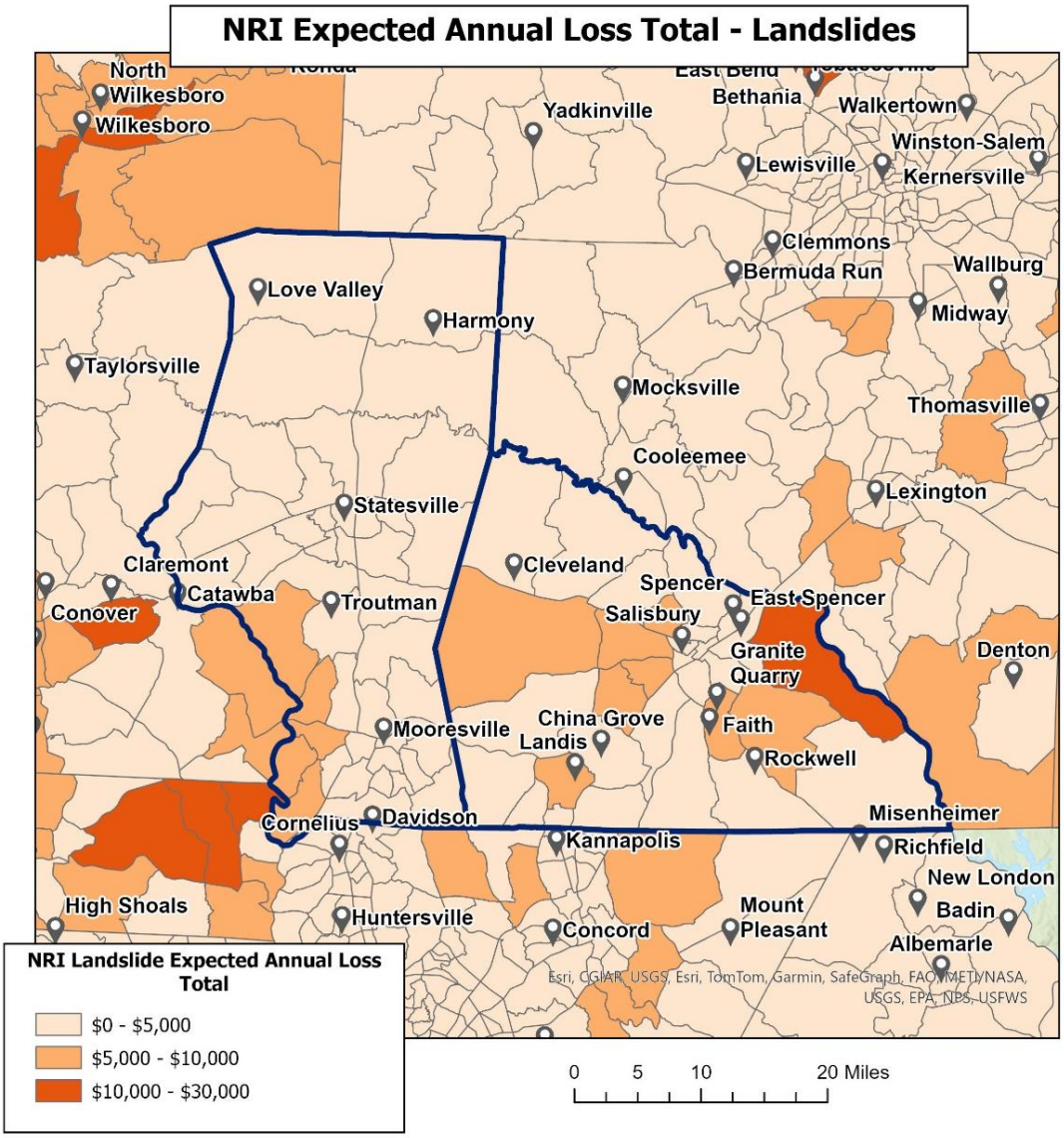


Figure 5- 77: NRI Expected Annual Loss for Landslides in the planning area by census tract.

Table 5- 53: NRI landslide data by jurisdiction based on census tracts in each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$20,628.72	80.31	Very High	83.01	Very High	0.01
Harmony	$2,750.85	81.79	Very High	73.80	Very High	0.01
Love Valley	$1,181.28	86.32	Very High	65.85	Relatively High	0.01
Mooresville	$79,734.18	84.87	Very High	82.77	Very High	0.01
Statesville	$60,195.20	76.32	Relatively High	71.96	Relatively High	0.01

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Troutman	$26,592.26	93.29	Very High	91.24	Very High	0.01
Rowan County *(Unincorporated Area)*	$3,448.98	66.32	Relatively High	64.53	Relatively High	0.01
China Grove	$14,151.93	89.65	Very High	84.29	Very High	0.01
Cleveland	$1,804.71	62.38	Relatively High	64.05	Relatively High	0.01
East Spencer	$4,347.60	70.72	Relatively High	66.93	Relatively High	0.01
Faith	$6,682.01	80.24	Very High	76.95	Relatively High	0.01
Granite Quarry	$8,121.56	78.57	Relatively High	76.16	Relatively High	0.01
Landis	$9,719.08	82.60	Very High	79.90	Relatively High	0.01
Rockwell	$2,379.48	81.63	Very High	75.36	Relatively High	0.01
Salisbury	$33,697.30	76.15	Relatively High	73.54	Relatively High	0.01
Spencer	$9,825.51	73.34	Relatively High	69.24	Relatively High	0.01

5.14.7. Landslide Hazard Vulnerability and Impact

Sufficient hazard information is not available to conduct a detailed vulnerability assessment. In addition, any specific vulnerability of individual assets would depend on individual design, building characteristics, and any existing mitigation measures currently in place. Such site-specific vulnerability determinations are outside the scope of this risk assessment but may be considered during future updates. Mitigation strategy regarding landslide identification and mapping will be considered in future mitigation actions for the Region.

5.14.8. Future Vulnerability: Problem Statement

People

There may be potential vulnerabilities in the planning area for residents who do not have telephone service in their housing unit, which would prevent critical alerts from reaching those potentially rural and isolated areas where individuals may become trapped or unable to receive assistance in the event of a hazard. In Iredell County 0.9% and Rowan County in 0.8% of households do not have telephone service in their housing unit which could prevent critical information being relayed to residents in those areas. Landslides may also disrupt power lines, sewer lines, water lines, and gas pipelines. This would lead to a risk of fires, explosions, or gas leaks along with disruption of utilities. The planning area should consider reducing the vulnerability of residents by working with telephone and internet providers to expand telephone service to areas without it in their housing units, develop landslide safety and education

programs, and conduct periodic review of the landslide risk across the planning area to appropriately prepare and prevent landslides.

Changes in Development or Housing Characteristics

Vulnerability to landslides varies throughout the planning area, but housing built in high hazard areas has an increased risk of experiencing damage due to landslides. As a result, the planning area should consider restricting development in locally identified high hazard landslide areas.

Economy

Depending on the extent of landslide impacts, the damage to homes, property, infrastructure, and critical facilities can strain the local economy due to the cost of repair and recovery. This includes replacement of property, repair of property, and disruption of services which may result in loss of income for businesses.

Natural Environment

The natural environment in the planning area has the potential to be impacted by landslides by damaging habitats, increase potential for flooding by blocking rivers, destroying vegetation, and polluting waterways with excess sediment.

First Responders

Landslides can disrupt infrastructure, facilities, buildings, and any development in the path of landslides. Landslides can prevent emergency services from responding to emergencies after landslide events and has the potential to disrupt communications after landslide events.

Continuity of Operations

The damage caused by landslides can disrupt the facilities and infrastructure needed to return to normal daily activities. Those who rely on the availability of utilities, infrastructure, and other property that may be impacted by landslides may experience disruptions to continuity of operations.

Climate Change

The increasing intensity of rainfall events anticipated because of climate change will lead to an increase in the number and extent of global landslide occurrences. However, there is little readily available evidence or studies that indicate a significant increase in landslide activity is likely in the planning area. The current North Carolina State HMP does not suggest that climate change may increase the increase the probability of earthquakes in North Carolina outside the mountainous regions in the western part of the state

Hydrologic Hazards

5.15. Dam and Levee Failure

5.15.1. Background

Dam failure is the uncontrolled release of water due to failure or structural issues, which can occur due to numerous factors such as structural weakness or integrity, overflow of water that exceeds the dam's capacity, natural events that compromise the integrity of the dam, or erosion through or around the dam, which compromises its stability.

Worldwide interest in dam and levee safety has risen significantly in recent years. Aging infrastructure, new hydrologic information, and population growth in floodplain areas downstream from dams and near levees have resulted in an increased emphasis on safety, operation, and maintenance.

There are approximately 92,000 dams in the United States as of 2024, according to FEMA's National Inventory of Dams (NID), most of which are privately owned. Other owners include state and local authorities, public utilities, and federal agencies. Dams provide numerous benefits, such as storage for drinking water, safe navigation channels, and agricultural irrigation. Dams also provide hydroelectric power, create lakes for fishing and recreation, and save lives by preventing or reducing the impacts of flood hazard events.

Though dams have many benefits, they also can pose a risk to communities if not designed, operated, and maintained properly. In the event of a dam failure, the energy of the water stored behind even a small dam can cause loss of life and great property damage if development exists downstream. If a levee breaks, scores of properties may become submerged in floodwaters and residents may become trapped by rapidly rising water. The failure of dams and levees has the potential to place large numbers of people and vast amounts of property in harm's way. The Iredell Rowan HMPC downloaded information from the State Dam Safety Program Office of NCDEQ website through NCDEQ, but dams that meet the following requirements are considered "exempt dams" according to the Senate Bill 107 / S.L. 2017-145 (06/29/2017) Dam Safety Law § 143-215.25A.:

- Dams constructed by the US Army Corps of Engineers (USACE) or other US Government Agency; Constructed with financial assistance from the United States Natural Resources
- Conservation Service when that agency designed or approved plans for the dam supervised its construction.
- Licensed by the Federal Energy Regulatory Commission (FERC), or for which a license application is pending with the FERC; For use in connection with electric generating facilities regulated by the Nuclear Regulatory Commission (NRC).
- Under a single private ownership that provides protection only to land or other property under the same ownership and does not threaten human life or property below the dam.
- That is less than 25 feet in height or that has an impoundment capacity of less than 50 acre (about twice the area of Chicago's Millennium Park)-feet, unless the Department determines that failure of the dam could result in loss of human life or severe damage to property below the dam.
- Constructed for and maintains the purpose of providing water for agricultural use, when a person who is licensed as a professional engineer or is employed by the Natural Resources Conservation Service, county, or local Soil and Water Conservation District, and has federal

engineering job approval authority under Chapter 89C of the General Statutes designed or approved plans for the dam.

In accordance with High Hazard Potential Dam (HHPD) HHPD1-a. and HHPD1-b requirements, each local government has collected and shared relevant data such as dam inspection findings with State Dam Safety Program office of NCDEQ, and shared Emergency Action Plans (EAPs), inundation maps. Potential impacts on critical infrastructure were communicated to HMPC members and the public, as they are included in potential future impacts to the planning area within the HMP drafts distributed for public comment and through public meeting and draft plan reviews. The jurisdictions in the planning area are expected to continue assisting with and continue to maintain compliance with regulatory requirements in cooperation with private, utility, and local government dam owners. Maintaining compliance with regulatory requirements will reduce vulnerabilities and the planning area will continue to explore mitigation actions that address deficiencies and reduce the long-term vulnerabilities. This includes prioritizing dams classified as high hazard dams for potential dam rehabilitation projects to reduce the long-term vulnerability of the planning area. Iredell and Rowan Counties have included mitigation actions to explore funding and dam rehabilitation projects to reduce long-term vulnerability of the planning area to dam failure or dam related hazard events, prioritized by the hazard classification in Table 5- 55.

5.15.2. Location

According to the State Dam Safety Program Office of the NCDEQ, there are 208 dams in the Iredell Rowan Region[54]. The figures below show the dam location and the corresponding hazard ranking for each. Of these dams, 50 are classified as high hazard potential according to the USACE National Inventory of Dams[55]. These high hazard dams are summarized by county in Table 5- 54. The figures below show counts and locations of high and intermediate hazard dams in each participating jurisdiction.

Table 5- 54: High hazard dams in Iredell and Rowan County According to the USACE National Inventory of Dams[56]

County	Number of High Hazard Dams
Iredell	28
Rowan	22
Total	**50**

[54] The February 8, 2012, list of high-hazard dams obtained from the North Carolina Division of Energy, Mineral, and Land Resources (http://portal.ncdenr.org/web/lr/dams) was reviewed and amended by local officials to the best of their knowledge.
[55] US Army Corps of Engineers. (n.d.). National Inventory of Dams (4.5.0) [Dataset]. https://nid.sec.usace.army.mil/#/
[56] US Army Corps of Engineers. (n.d.). National Inventory of Dams (4.5.0) [Dataset]. https://nid.sec.usace.army.mil/#/

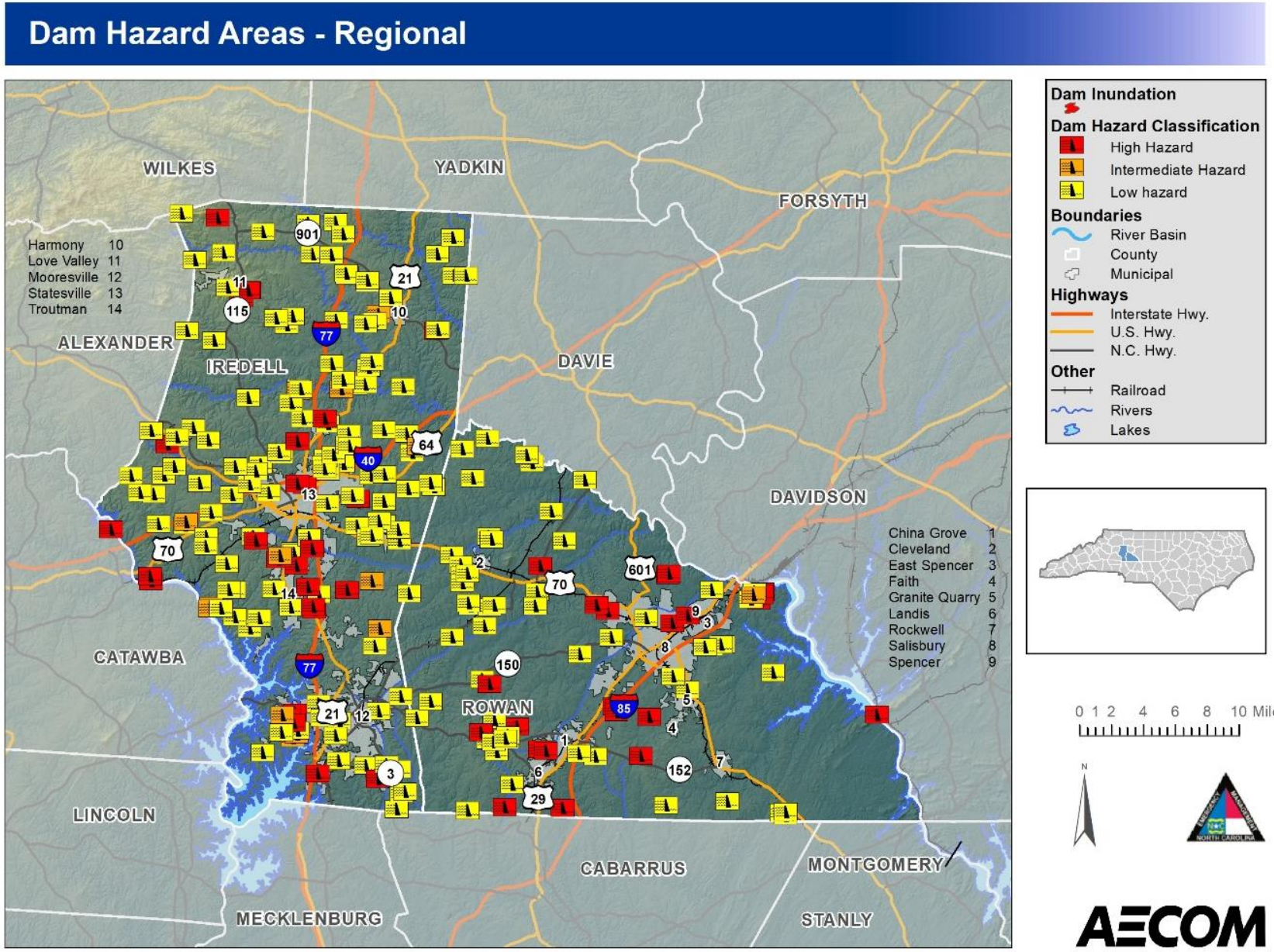


Figure 5- 78: Dam Failure Hazard Areas in Iredell County and Rowan County

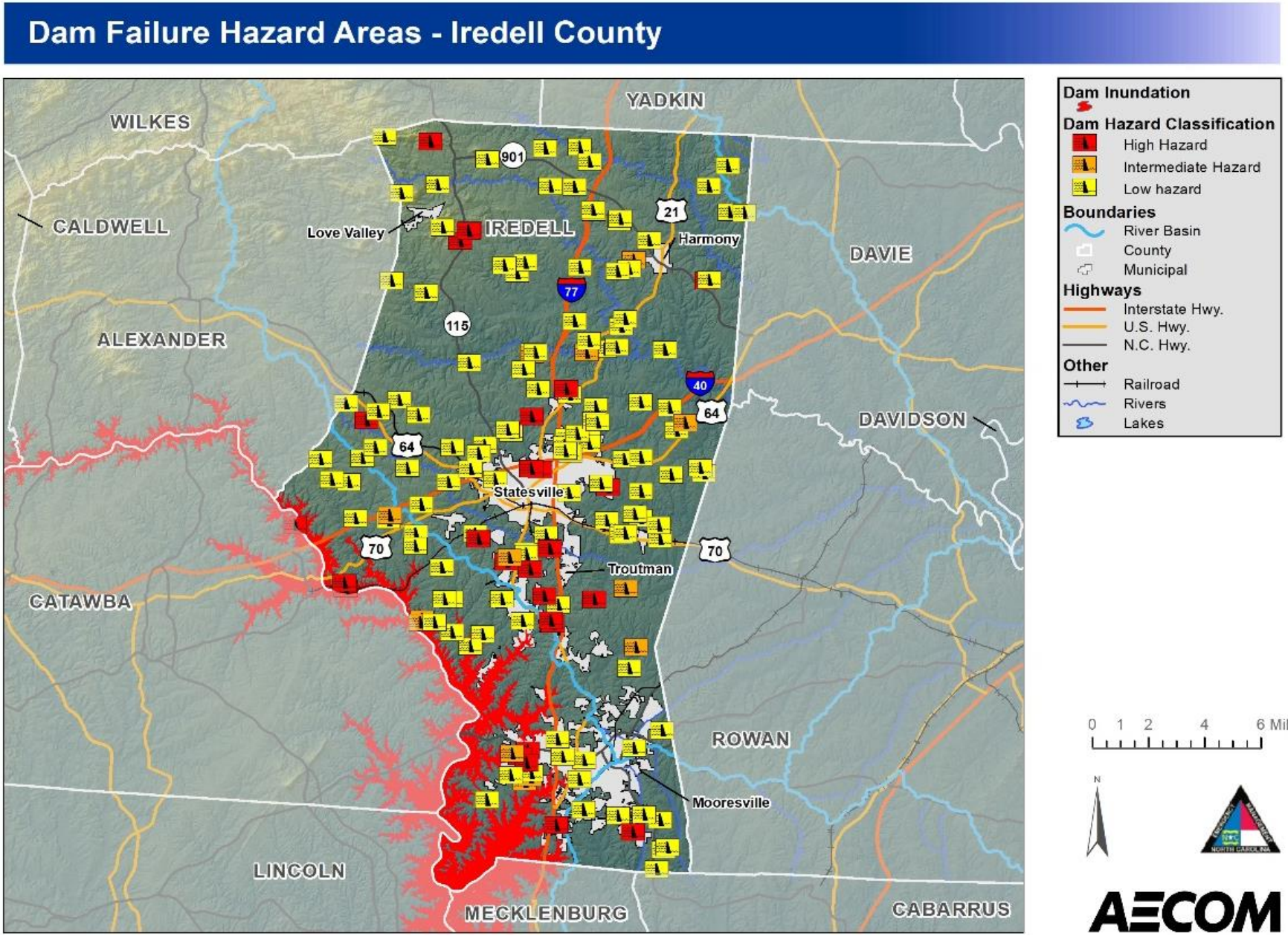


Figure 5- 79: Dam Failure Hazard Areas in Iredell County

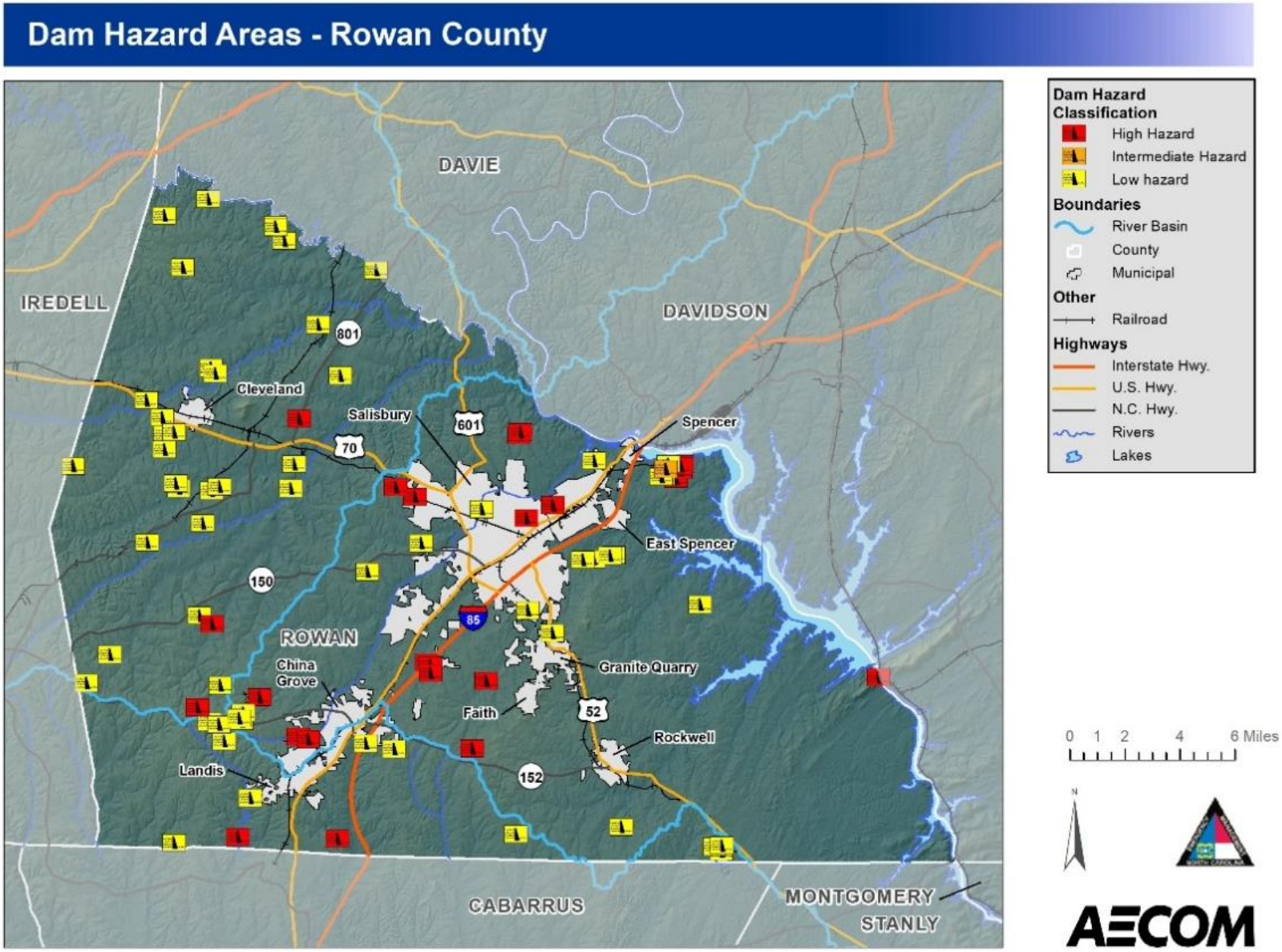


Figure 5- 80: Rowan County Dam Failure Hazard Areas

It should also be noted that dam regulations for classifying dams were recently changed. As a result, more dams are generally classified as high-hazard.

5.15.3. Extent (Magnitude and Severity)

Two factors influence the potential severity of a dam failure: the amount of water impounded, and the density, type, and value of development and infrastructure located downstream. The potential extent of dam failure may be classified according to its "hazard potential," meaning the probable damage that would occur if the structure failed in terms of loss of human life and economic loss or environmental damage. The State Dam Safety Program Office of NCDEQ classifies dam structures under its regulations according to hazard potential as described in Table 5- 55.

Table 5- 55: Dam Hazard Classification[57]

Hazard Classification	Description	Quantitative Guidelines
Low	Dams located where failure may damage uninhabited, low-value, non-residential buildings, agricultural land, or low-volume roads.	1) Less than 25 vehicles per day 2) Less than $30,000
Intermediate	Dams located where failure may damage highways or secondary railroads, cause interruption of use or service of public utilities, cause minor damage to isolated homes, or cause minor damage to commercial and industrial buildings.	1) 25 to less than 250 vehicles per day 2) $30,000 to less than $200,000
High	Dams located where failure will cause loss of life or serious damage to homes, industrial and commercial buildings, important public utilities, primary highways, or major railroads.	1) Probable loss of 1 or more human lives 2) More than $200,000

Table 5- 56: Dam Status Definitions

Dam Status	Definition
Breached	An opening or a breakthrough of a dam sometimes caused by rapid erosion of a ssection of earth embankment by water
Impounding	Dam that creates a reservoir to hold back water, creating a pool or lake behind it for various purposes including flood control, irrigation, or recreation.
Reclaimed	A dam that has undergone restoration after being damaged, reclaimed, or restored but is repurposed and no longer served the same purpose as it was built for.
Drained	A dam that has been deliberately emptied or drained for various reasons such as maintenance, repairs, or safety reasons.

[57] NCDEQ. (2024). NC Dam Inventory (No. 4ef4238790214334bd9261bcfa0e724a) [CSV]. NCDEQ. https://ncdenr.maps.arcgis.com/home/item.html?id=4ef4238790214334bd9261bcfa0e724a

Data was downloaded from the North Carolina Department of Environmental Quality Dam Inventory. The dams are displayed based on their hazard classification.

Table 5- 57: Dams in Iredell County and Rowan County from the NCDEQ Dam Inventory[58]

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-019	Skyview Lake Dam Lower	Low	1900-01-01	Iredell	Breached	Not Rated	2020-10-21	10/21/2025	Unknown
IREDE-034	Gilliam Dam	Low	1900-01-01	Iredell	Breached	Not Rated	2017-09-19	10/01/2022	Unknown
IREDE-288	Betty Bell Gatton Dam	Low	2012-05-14	Iredell	Breached	Unknown	Unknown	Unknown	Unknown
IREDE-054	Grace W R Dam	Low	1900-01-01	Iredell	Breached	Not Rated	2014-12-18	12/17/2099	Unknown
IREDE-073	Wilson Brothers Dam South #2	Low	1900-01-01	Iredell	Breached	Fair	2023-12-06	12/06/2028	Private
IREDE-128	Campbell Pond Dam #2	Low	2008-02-15	Iredell	Breached	Not Rated	2016-10-19	11/01/2021	Unknown
IREDE-161	Visaggio Dam	Low	2023-03-22	Iredell	Breached	Fair	2020-10-21	10/21/2023	Unknown
CABAR-036	Goodman Pond Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-08	12/08/2026	Private
IREDE-001	Third Creek Watershed Dam #18	High	1900-01-01	Iredell	Impounding	Fair	2023-03-14	03/14/2025	Private
IREDE-002	Wilkinson Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2023-02-09	02/09/2028	Private
IREDE-003	Duke Power Park Lake Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-08-04	08/04/2026	State
IREDE-004	Third Creek Watershed Dam #20	High	2007-12-03	Iredell	Impounding	Fair	2023-03-14	03/14/2025	Private
IREDE-005	Third Creek Watershed Dam #21	High	2007-08-01	Iredell	Impounding	Fair	2023-03-09	03/09/2025	Private
IREDE-006	Third Creek Watershed Dam #34a	Intermediate	2019-02-06	Iredell	Impounding	Fair	2023-02-09	02/09/2026	Private
IREDE-007	Crawford Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-008	Third Creek Watershed Dam #11	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-009	Third Creek Watershed Dam #37	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-010	Third Creek Watershed Dam #19	Low	1900-01-01	Iredell	Impounding	Not Rated	2020-10-21	10/21/2025	Private

[58] NC Department of Environmental Quality [NCDEQ]. (2024). North Carolina Dam Inventory [Dataset]. In NCDEQ Online GIS. NCDEQ. https://data-ncdenr.opendata.arcgis.com/datasets/ncdenr::north-carolina-dam-inventory/explore?filters=eyJEQU1fSEFaQVJEX1BPVEVOVElBTF9ERVNDUklQVEkiOlsiSGlnaCJdLCJDT05ESVRJT05fQVNTRVNTTUVOVCI6WyJQb29yIiwiVW5zYXRpc2ZhY3RvcnkiXX0%3D&location=36.851331%2C-83.033873%2C10.00

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-011	Third Creek Watershed Dam #10	Low	1900-01-01	Iredell	Impounding	Not Rated	2020-10-21	10/21/2025	Private
IREDE-012	Third Creek Watershed Dam #9	High	2005-09-12	Iredell	Impounding	Fair	2023-04-19	04/19/2025	Private
IREDE-013	Statesville Flour Mill Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2017-09-19	10/01/2022	Private
IREDE-014	Hawthorne Lake Dam Upper	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-015	Hawthorne Lake Dam Lower	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-017	Daniels Dam North	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-018	Skyview Lake Dam Upper	High	2004-07-30	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-020	Fox Mountain Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-021	Martin Dam	High	1900-01-01	Iredell	Impounding	Fair	2023-04-19	04/19/2025	Private
IREDE-022	Cass Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-023	Allison Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2023-02-09	02/09/2028	Private
IREDE-024	Third Creek Watershed Dam #12c	High	2007-06-18	Iredell	Impounding	Fair	2023-03-14	03/14/2025	Private
IREDE-025	Fox Coite Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2021	Private
IREDE-026	Lookout Shoals Dam	High	1900-01-01	Iredell	Impounding	Not Rated	2008-06-26	06/26/2999	Utility
IREDE-027	Mills Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private
IREDE-029	Howard Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-030	Brazel Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-031	Mathis Lake Dam	High	1900-01-01	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-032	Garris Dam	Intermediate	1900-01-01	Iredell	Impounding	Fair	2023-12-19	12/19/2026	Private
IREDE-033	Harris Pond Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-035	Wilson Godfrey Dam	High	1900-01-01	Iredell	Impounding	Fair	2023-04-19	04/19/2025	Private
IREDE-036	New Hope Fishing Lake East Dam	High	1900-01-01	Iredell	Impounding	Poor	2023-09-21	09/21/2024	Private
IREDE-037	New Hope Fishing Lake West Dam	High	1900-01-01	Iredell	Impounding	Poor	2023-09-21	09/21/2024	Private
IREDE-038	Hill Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-039	Mann Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-040	Stroud Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-167	Holland Dairy Farm Dam	Low	2011-01-11	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-168	Peggy Dam	Low	2013-07-30	Iredell	Impounding	Not Rated	2018-10-30	10/30/2023	Private
IREDE-169	Mooresville Golf Coarse Dam	Low	2013-07-30	Iredell	Impounding	Not Rated	2018-10-30	10/30/2023	Private
IREDE-170	Girl Scouts Dam at Oak Springs	Intermediate	2013-10-15	Iredell	Impounding	Fair	2023-02-09	02/09/2026	Private
IREDE-285	Lineberger Road Dam	Intermediate	2018-06-01	Iredell	Impounding	Not Rated	2018-05-30	10/01/2023	Private
IREDE-286	Rodenbeck Aquaculture Pond Dam	Intermediate	2018-11-07	Iredell	Impounding	Fair	2023-12-19	12/19/2026	Private
IREDE-287	Waste Pond #4 Dam	Low	2016-10-06	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-289	Rick Howell Lake Dam	High	2020-02-07	Iredell	Impounding	Unsatisfactory	2023-09-21	09/21/2024	Private
IREDE-290	Carrigan Irrigation Pond Dam	Low	2017-04-27	Iredell	Impounding	Not Rated	2020-07-28	07/27/2025	Private
IREDE-291	Ken Grant Dam	Low	2010-12-09	Iredell	Impounding	Not Rated	2020-10-21	10/21/2025	Private
IREDE-292	Rocky Creek Dairy Waste Pond #6 Dam	Low	2017-05-11	Iredell	Impounding	Not Rated	2020-11-03	11/03/2025	Private
IREDE-293	Larkin Golf Course North Dam	High	2020-07-29	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-294	Larkin Golf Course South Dam	High	2020-07-29	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-295	South Yadkin Raw Water Intake Dam	Low	2021-07-15	Iredell	Impounding	Fair	2023-11-29	11/29/2028	Local Gov
IREDE-296	Souther Farms Dam	Low	2022-01-11	Iredell	Impounding				Private
IREDE-297	Troutman Logistics Center SW Pond Dam 1	High	2022-08-19	Iredell	Impounding	Not Rated	2023-04-26	04/26/2025	Private
IREDE-298	Troutman Logistics Center SW Pond Dam 2	High	2022-08-19	Iredell	Impounding	Not Rated	2023-04-26	04/26/2025	Private
IREDE-299	Rocky Creek Dam	Low	2022-10-17	Iredell	Impounding	Poor	2023-11-29	11/29/2028	Private
IREDE-300	Houpes Farm Dam	Low	2023-02-10	Iredell	Impounding	Fair	2023-04-26	04/26/2025	Private
IREDE-304	Love Valley Dam	High	2024-07-01	Iredell	Impounding				Private
IREDE-041	Johnson Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-042	Parker Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private
IREDE-043	Joy Acres Farm Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-044	Statesville Country Club Dam #2	High	1900-01-01	Iredell	Impounding	Fair	2023-03-14	03/14/2025	Private
IREDE-045	Statesville Country Club Dam #1	Low	1900-01-01	Iredell	Impounding	Fair	2021-04-20	04/20/2022	Private
IREDE-046	Parks Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private
IREDE-047	Shaver Dam	Intermediate	1900-01-01	Iredell	Impounding	Fair	2021-11-23	11/23/2024	Private
IREDE-048	West Realty Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-049	Clodfelter Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-050	Stradley Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-051	Clara Moose Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-052	Oswalt Sam Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-053	Brown Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private
IREDE-055	Smith Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-056	Shaffir Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-057	Crosby Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-058	Shumaker Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-059	Daniels Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-060	Umbarger Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-061	Hix James Dam	Intermediate	1900-01-01	Iredell	Impounding	Fair	2023-12-21	12/21/2026	Private
IREDE-062	Stack Dam	Low	1900-01-01	Iredell	Impounding	Unsatisfactory	2023-02-09	02/09/2028	Private
IREDE-063	Shell Wesley Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-064	Boyce Church Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-065	Kelly W. Keith Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-066	Fullwood Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-067	Blackwelder Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-068	Van Den Eynden Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-069	Brown John Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-070	Mullis Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-071	Morrison R.R. Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-074	Gray Kenneth Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-075	Alexander W N Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2017-10-05	10/05/2022	Private
IREDE-076	Mundy James R. Dam	Intermediate	2012-10-23	Iredell	Impounding	Fair	2023-12-19	12/19/2026	Private
IREDE-077	EC Caudill Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/15/2026	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-078	Morrison Plantation Dam #1	High	2004-09-01	Iredell	Impounding	Fair	2024-01-12	01/12/2026	Private
IREDE-079	Mcguire-Whitson Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-080	Lake Street Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2017-09-19	10/01/2022	Private
IREDE-083	Hawthorne Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-084	Crawford Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-085	Holland Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-086	Reneger Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-087	Stamey Farms Pond Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2017-09-19	10/01/2022	Private
IREDE-088	Crystal Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-090	Brookdale Lake Dam	High	1900-01-01	Iredell	Impounding	Fair	2023-03-14	03/14/2025	Local Gov
IREDE-091	Windy Hill Acres Lake Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-092	Goforth Dam #1	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-093	Goforth Dam #2	Low	1900-01-01	Iredell	Impounding	Fair	2023-11-29	11/29/2028	Private
IREDE-094	Barnes Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2017-10-05	10/05/2022	Private
IREDE-095	Colon Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-096	Troutman Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-097	Earnhart Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-30	10/30/2023	Private
IREDE-098	Toby Campbell Dam	Low	1900-01-01	Iredell	Impounding	Fair	2023-11-29	11/29/2028	Private
IREDE-120	Hoot-N-Hollar Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-121	Price Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-122	Regency Lake Dam	Intermediate	2012-03-26	Iredell	Impounding	Fair	2023-02-09	02/09/2026	Private
IREDE-123	Farmstead Lake Dam	Intermediate	2019-01-24	Iredell	Impounding	Fair	2023-02-09	02/09/2026	Private
IREDE-124	Woods Drive Dam	High	1900-01-01	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-126	Myers Pond Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-127	Campbell Pond Dam #1	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-129	Bell Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-130	Harold G. Bolick Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2021-11-16	11/16/2026	Private
IREDE-131	Richard Douglas Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-132	Earth Movers Dam Lower	High	1900-01-01	Iredell	Impounding	Fair	2023-04-19	04/19/2025	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-133	Earth Movers Dam Upper	High	1900-01-01	Iredell	Impounding	Fair	2023-04-19	04/19/2025	Private
IREDE-134	Brewer Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-135	Hazel Farm Pond Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-136	Sloan Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-137	Franklin Grove Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-02	10/02/2023	Private
IREDE-138	Sharpe Dam	Low	2008-03-28	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-140	Bynum Wood Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/30/2023	Private
IREDE-142	W&W Dairy Waste Storage Pond Dam	Low	1900-01-01	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-143	Harbor Watch SD Upper Dam	Intermediate	1998-09-17	Iredell	Impounding	Fair	2020-12-03	12/03/2025	Private
IREDE-144	Harbor Watch SD Lower Dam	Intermediate	1998-09-17	Iredell	Impounding	Fair	2023-12-19	12/19/2026	Private
IREDE-145	Curtis Pond Dam	High	1900-01-01	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-146	Farmstead Pond Dam	Low	1900-01-01	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-147	Statesville Raw Water Reservoir Dam	High	2008-12-16	Iredell	Impounding	Fair	2024-01-18	01/18/2026	Local Gov
IREDE-148	Lowe's SSC Dam (aka CSC Mooresville Dam)	High	2001-12-06	Iredell	Impounding	Fair	2023-05-19	05/19/2025	Private
IREDE-149	Morrison Plantation Dam #2	High	2004-09-01	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-150	Morrison Plantation Dam #3	High	2004-08-05	Iredell	Impounding	Fair	2024-01-11	01/11/2026	Private
IREDE-152	Regina Cecil Dam	Intermediate	2005-04-01	Iredell	Impounding	Fair	2021-11-23	11/23/2024	Private
IREDE-153	J. Reid Gray Farm Pond Dam	Low	2002-06-05	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-154	Rogge Pond Dam	Low	2005-08-29	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-155	Maness Dairy Waste Storage Pond Dam	Low	2005-09-24	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-156	Welborn Pond Dam	Low	2006-04-06	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-157	Dixieland Shepherds Watch Dam	Low	2007-08-31	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-158	Talbert Pointe Pond #1 Dam	Low	2008-04-09	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-159	Goodman Waste Storage Pond #3 Dam	Low	2008-07-23	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
IREDE-160	Galliher Farm Waste Storage Dam	Low	2008-07-15	Iredell	Impounding	Not Rated	2018-10-31	10/31/2023	Private
IREDE-162	Amos Lake Dam	Low	2009-09-14	Iredell	Impounding	Fair	2021-12-02	12/02/2026	Private
IREDE-163	Oak Village Dam	Low	2010-07-02	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-164	Dale Earnhardt Jr Dam	Low	2010-08-03	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-165	Oaks on Main Dam	Low	2010-08-17	Iredell	Impounding	Fair	2021-12-07	12/07/2026	Private
IREDE-166	Mike Campbell Dam	Low	2010-09-10	Iredell	Impounding	Fair	2021-11-16	11/16/2026	Private
IREDE-301	Barnard Dam	Low	2023-03-06	Iredell	Pending	Poor	2023-11-29	11/29/2028	Private
IREDE-302	Wilkinson Lake Dam #2	Low	2023-05-02	Iredell	Pending	Fair	2023-12-06	12/06/2028	Private
IREDE-303	Myers Pond Dam #2	Low	2023-11-09	Iredell	Pending	Fair	2023-12-06	12/06/2028	Private
IREDE-016	Hatfield Assoc. Lake Dam	Low	2010-11-29	Iredell	Reclaimed	Unknown	2010-11-24	11/24/2999	Unknown
IREDE-028	Rea Construction Company Pond Dam	Low	1900-01-01	Iredell	Reclaimed	Not Rated	2014-12-05	12/05/2099	Unknown
IREDE-284	Meadows at Coddle Creek Subdivision Dam	Low	2023-07-11	Iredell	Reclaimed	Satisfactory	2023-07-11	07/11/2033	Unknown
IREDE-072	Wilson Brothers Dam North #1	Low	1900-01-01	Iredell	Reclaimed	Not Rated	2020-10-21	10/21/2025	Unknown
IREDE-082	Hawthorne Dam	Low	1900-01-01	Iredell	Reclaimed	Satisfactory	2011-10-18	10/18/2999	Unknown
IREDE-125	Ferndale Dam	Low	2012-03-06	Iredell	Reclaimed	Satisfactory	2011-11-29	11/29/2999	Unknown
ROWAN-026	Ethel Propst Dam	Low	2023-02-28	Rowan	Breached	Fair	2021-01-06	01/06/9999	Unknown
ROWAN-036	Lakewood Acres Dam	Low	1900-01-01	Rowan	Breached	Fair	2021-12-15	12/15/2999	Unknown
ROWAN-066	Happy Lake Dam	High	2007-11-05	Rowan	Drained	Fair	2023-03-30	03/30/2025	Private
ROWAN-068	Buck Ash Basin #1 Dam	High	2010-10-23	Rowan	Drained	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-071	Buck Ash Basin Divider Dam	High	2010-03-23	Rowan	Drained	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-073	Briarwood Lake Dam	Low	2010-04-21	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-074	Chicken Springs Dam	High	2016-07-19	Rowan	Impounding	Unsatisfactory	2023-09-20	09/20/2024	Private

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ROWAN-075	Buck Beneficial Ash Dry Pond Dam	Low	2018-05-10	Rowan	Impounding	Not Rated	2020-10-15	10/15/2025	Utility
ROWAN-076	Buck Beneficial Ash Wet Pond Dam	Low	2018-05-10	Rowan	Impounding	Not Rated	2020-10-15	10/15/2025	Utility
ROWAN-077	Leo Miller Dam	Low	2016-11-15	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-078	Williams Dam	Low	2015-07-22	Rowan	Impounding	Not Rated	2020-10-22	10/22/2025	Private
ROWAN-079	Buck Retention Basin Dam	Intermediate	2022-03-07	Rowan	Impounding	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-080	Yadkin High Rock Dam	High	2021-01-15	Rowan	Impounding	Unknown	Unknown	Unknown	Utility
ROWAN-081	Shinn Pond Dam #2	Low	2023-08-16	Rowan	Impounding	Fair	2023-12-06	12/06/2028	Private
ROWAN-082	Hutchison Pond Dam	Low	2023-08-16	Rowan	Impounding	Fair	2023-12-08	12/08/2028	Private
ROWAN-083	Johnson Pond Dam	Low	2023-08-16	Rowan	Impounding	Fair	2023-12-06	12/06/2028	Private
ROWAN-084	Earnhardt Pond Dam	Low	2023-08-16	Rowan	Impounding	Fair	2023-12-05	12/05/2028	Private
ROWAN-085	Cartner Pond Dam	Low	2023-08-17	Rowan	Impounding	Fair	2023-12-06	12/06/2028	Private
ROWAN-086	Ward-Cartner Pond Dam	Low	2023-08-17	Rowan	Impounding	Fair	2023-12-06	12/06/2028	Private
ROWAN-087	Yelton Dam #1	Low	2023-08-17	Rowan	Impounding	Fair	2023-12-05	12/05/2028	Private
ROWAN-088	Yelton Dam #2	Low	2023-08-17	Rowan	Impounding	Fair	2023-12-05	12/05/2028	Private
ROWAN-089	Wiggins Pond Dam	Low	2023-08-17	Rowan	Impounding	Fair	2023-12-06	12/06/2028	Private
ROWAN-001	Alpine Lake Dam	High	1900-01-01	Rowan	Impounding	Fair	2023-09-20	09/20/2025	Private
ROWAN-002	Cooleemee Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2013-11-14	09/09/2999	Local Gov
ROWAN-003	Fiber Lake Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-004	Scotch-Irish Plantation Lake Dam	Low	1900-01-01	Rowan	Impounding	Fair	2023-01-26	01/26/2028	Private
ROWAN-005	Rowan County Wildlife Lake Dam	High	1900-01-01	Rowan	Impounding	Fair	2023-03-30	03/30/2025	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
ROWAN-006	Landis Water Reservoir Dam	High	1900-01-01	Rowan	Impounding	Fair	2024-08-09	01/15/2025	Local Gov
ROWAN-007	Lake Kannapolis Dam	High	1900-01-01	Rowan	Impounding	Poor	2024-08-09	01/15/2026	Local Gov
ROWAN-008	Thomas Hall Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-009	Nicholas Lake Dam	Low	1900-01-01	Rowan	Impounding	Fair	2023-01-26	01/26/2028	Local Gov
ROWAN-011	Patterson Pond Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-012	Kerr Pond Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-013	London Pond Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-15	12/15/2026	Private
ROWAN-015	Brown Pond Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-25	10/25/2023	Private
ROWAN-016	Carl Hall Lake Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-017	Carl Hall Lake Dam #2	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-018	Shinn Pond Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2017-09-26	09/26/2022	Private
ROWAN-019	Cress Pond Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-25	10/24/2023	Private
ROWAN-020	Brown Pond Dam	Low	1900-01-01	Rowan	Impounding	Fair	2023-01-26	01/26/2028	Private
ROWAN-021	Hall Pond Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-022	Goodnight Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-023	Cannon Golf Club Pond Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-15	12/15/2026	Private
ROWAN-024	Lake Corriher Dam	High	1900-01-01	Rowan	Impounding	Poor	2024-08-09	01/15/2025	Local Gov
ROWAN-025	Landis Lake Dam	High	1900-01-01	Rowan	Impounding	Poor	2024-08-09	01/15/2025	Local Gov
ROWAN-027	H A Rouzer Dam	Low	1900-01-01	Rowan	Impounding	Fair	2023-01-26	01/26/2028	Private
ROWAN-028	Salisbury City Park Dam	High	1900-01-01	Rowan	Impounding	Fair	2024-01-03	01/03/2026	Local Gov

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
ROWAN-029	Murray Corriher Dam #1	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-030	East W W Davis Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2017-09-26	09/26/2022	Private
ROWAN-031	West W W Davis Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2017-09-26	09/26/2022	Private
ROWAN-032	Kepley Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-033	Stephen Davis Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2017-09-26	09/26/2022	Private
ROWAN-034	Piedmont Research Station Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	State
ROWAN-035	Jack Hodge Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-037	Waller Dam	High	1900-01-01	Rowan	Impounding	Fair	2024-01-03	01/03/2026	Private
ROWAN-038	Ellis Crossroads Raw Water Reservoir Dam #1	High	1900-01-01	Rowan	Impounding	Fair	2023-03-30	03/30/2025	Local Gov
ROWAN-039	Ellis Crossroads Raw Water Reservoir Dam #2	High	1900-01-01	Rowan	Impounding	Fair	2023-03-30	03/30/2025	Local Gov
ROWAN-040	Mckinney Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-25	10/25/2023	Private
ROWAN-047	Buck Main Ash Basin Dam	High	2010-03-23	Rowan	Impounding	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-051	Messinger Lake Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-25	10/31/2023	Private
ROWAN-052	Murray Corriher Dam #2	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-053	Young Pond Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-25	10/25/2023	Private
ROWAN-054	Carolina Stalite Company Dam	Low	1900-01-01	Rowan	Impounding	Not Rated	2017-09-28	09/28/2022	Private
ROWAN-055	Howard Hensley Dam	High	2009-12-31	Rowan	Impounding	Fair	2023-03-30	03/30/2025	Private
ROWAN-056	Donald Rand Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-057	Tony Woodard Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-15	12/15/2026	Private

State ID	Dam Name	Hazard Level	Hazard Date	County	Status	Condition	Last Date of Inspection	Next Date of Inspection	Owner Type
ROWAN-058	Murray Corriher Dam #3	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-15	12/15/2026	Private
ROWAN-059	Sandra Sinclair Dam #1	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-060	Sandra Sinclair Dam #2	Low	1900-01-01	Rowan	Impounding	Not Rated	2018-10-31	10/31/2023	Private
ROWAN-061	Mirror Lake Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-062	Stricklin Dam	High	1900-01-01	Rowan	Impounding	Fair	2024-01-03	01/03/2026	Private
ROWAN-063	Salisbury Community Park Dam	High	1900-01-01	Rowan	Impounding	Fair	2024-01-03	01/03/2026	Local Gov
ROWAN-064	V.A. Hospital Dam	Low	1900-01-01	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Federal
ROWAN-065	Stoltz Road Dam	Low	2007-02-06	Rowan	Impounding	Not Rated	2018-10-25	10/31/2023	Private
ROWAN-067	Clearview Dam	Low	2010-02-26	Rowan	Impounding	Fair	2021-12-08	12/08/2026	Private
ROWAN-069	Buck Basin #1 to Basin #2 Dam	High	2010-03-23	Rowan	Impounding	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-070	Buck Basin #2 to Basin #3 Dam	High	2010-03-23	Rowan	Impounding	Satisfactory	2023-10-25	10/25/2024	Utility
ROWAN-091	Charles Gibbons Dam	Low	2024-02-12	Rowan	Pending	Unknown	Unknown	Unknown	Private
ROWAN-090	Monarch Meadows Dam	High	2024-01-24	Rowan	Proposed	Proposed	Proposed	Proposed	Private
ROWAN-092	Rowan 85 Sand Filter 1 Dam	High	2024-03-19	Rowan	Proposed	Proposed	Proposed	Proposed	Private
ROWAN-093	Rowan 85 Sand Filter 2 Dam	High	2024-03-19	Rowan	Proposed	Proposed	Proposed	Proposed	Private
ROWAN-094	Rowan 85 Sand Filter 3 Dam	High	2024-03-19	Rowan	Proposed	Proposed	Proposed	Proposed	Private
ROWAN-010	Woodleaf Quarry Dam	Low	1900-01-01	Rowan	Reclaimed	Not Rated	2016-11-15	11/15/9999	Unknown
ROWAN-014	Graham Pond Dam	Low	1900-01-01	Rowan	Reclaimed	Satisfactory	2021-12-15	12/15/2999	Unknown
ROWAN-072	Buck Fuel Containment Dam	Low	2010-08-25	Rowan	Reclaimed	Satisfactory	2017-05-11	11/10/2021	Unknown
IREDE-019	Skyview Lake Dam Lower	Low	1900-01-01	Iredell	Breached	Not Rated	2020-10-21	10/21/2025	Unknown

5.15.4. Historical Occurrences

According to the NC Dam Safety Inventory, there are 7 dams in Iredell County and 2 dams in Rowan County that have a status of “breached”, but the majority of dams in the planning area are impounding dams (See Table 5- 57).

Table 5- 58: Status of Dams in Iredell County and Rowan County

Status	Iredell County	Rowan County
Breached	7	2
Impounding	150	72
Pending	3	1
Reclaimed	6	3
Proposed	0	4
Drained	0	3
Total	**166**	**85**

Table 5- 59: Condition of Dams in Iredell County and Rowan County

Condition	Iredell County	Rowan County
Fair	106	44
Poor	4	3
Satisfactory	3	8
Unsatisfactory	2	1
Not Rated	47	23
Total	**162**	**79**

5.15.5. Probability of Future Occurrence

Given the current dam inventory and historical data, a future dam breach is unlikely (less than 1 percent annual probability). However, as has been demonstrated in the past, regular monitoring is necessary to prevent these events. No further analysis will be completed in the following Vulnerability Assessment section as more sophisticated dam breach plans (typically completed by the USACE) have been completed for dams of concern in the region.

5.15.6. Dam Failure Hazard Vulnerability and Impact Limitations

There is a fundamental limitation in the data available for vulnerability assessment for the dam/levee failure hazard in the planning area. The dam structures that are of concern are smaller, privately owned, and unregulated dams for which no GIS data or inventories are currently available. These are the facilities that could and likely would cause the most damage and disruption should a more likely failure occur.

It has been determined that any rudimentary calculations based on the point locations for the dams mapped by NCDEQ would also be potentially misleading if any buffer or proximity analysis was performed to estimate surrounding impacts should a failure occur.

Therefore, any mitigation actions developed for this hazard should address data limitations, education and awareness programs, and/or any jurisdiction-specific concerns that may be addressable through an appropriate mitigation project. The following tables provide counts and values by jurisdiction relevant to dam failure hazard vulnerability in the Iredell-Rowan Regional HMP Area.

5.15.7. Future Vulnerability: Problem Statements

People

Those who are located near a high-risk dam are at a higher risk of catastrophic damage to property, infrastructure, and critical facilities, which requires rapid response time for residents in areas of potential or imminent damn failure. Those who do not have access to telephone service in Iredell County 0.9% and Rowan County 0.8% of households may not receive imminent dam failure alerts in time to evacuate or prepare. In addition, the ability to respond to evacuation orders requires access to a vehicle. However, 3.2% of Iredell County residents and 6.5% of Rowan County residents do not have access to a vehicle in their household. This can create a significant challenge in the event of evacuation orders or the need for urgent evacuation. Special considerations should also be made for those who may have limited mobility, such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities,11.7% in Iredell and 16% in Rowan County. To address the potential impact on individuals vulnerable to dam failure impacts in the planning area, jurisdictions should consider the following mitigation actions:

- Evaluate emergency response resource capabilities to accommodate potential population growth, including additional shelters, supplies, and trained personnel.
- Expand emergency response resources to develop evacuation plans for residents without vehicles, residents with limited mobility, or those requiring extra assistance in a time-sensitive emergency.
- Conduct regular evaluations to ensure that all community members have equitable access to support and resources to prepare and recover from dam failure or levee failure events.
- Collaborate with nonprofits and community organizations to reach underserved communities and populations to ensure that flood and dam failure preparedness resources are provided.
- Consider collaborating with telephone and internet utility providers to expand service to areas with limited telephone signals to ensure that individuals in high-hazard areas can receive alerts of impending dam failure in a timely manner.

Changes in Development or Housing Characteristics

Iredell County has increased the number of housing units by 13.72% between 2018 and 2023, which reflects the projected population growth of 20% highlighted by the 2045 Horizon Plan. Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. As a result of the increase in population and

housing units, the planning area should consider limiting development in high-hazard areas. The planning area should also consider the following mitigation actions:

- Incorporate a growth management strategy integrating housing development into emergency response plans to minimize the potential risks associated with increased development in dam hazard areas.
- Assess emergency response capabilities annually to enhance emergency response capabilities to align with projected population growth.
- Invest in flood mitigation infrastructure (e.g., retention ponds, improved drainage systems) in areas with high housing density or projected high housing density and flood risk for flooding related to dam failure.

Economy

Dam and levee failure can damage property, businesses, agriculture, and infrastructure, resulting in a significant loss of income for the planning area. Each County in the planning area has a significant portion of land dedicated to agriculture, so river flooding threatens to impact local crops and agricultural operations. In addition, as the planning area aims to see a general increase in development in the future, potential dam failure could lead to property damage, infrastructure damage, and disruption of continuity of operations, significantly impacting the local economy, businesses, residents, and government. To address the potential impact on the economy from dam failure impacts in the planning area, jurisdictions should consider the following mitigation actions:

- Explore funding for flood-resilient infrastructure in key areas to improve post-dam failure flooding resilience.
- Explore funding to enhance dam maintenance and safety programs, which would fund actions such as repairing damage and addressing dam status to prevent dam failures.

Natural Environment

Dam failure causes increased soil erosion and rapid sedimentation, which clogs the waterways, decreases water quality by carrying pollutants downstream, contributing to contamination of rivers and lakes, and can destroy ecosystems downstream by destroying habitats for wildlife and plants. Dam Failure events also create the potential for hazardous materials and chemicals to contaminate local water sources and disrupt ecosystems. To address the potential impact on the environment from dam failure in the planning area, jurisdictions should consider the following mitigation actions:

- Conduct a hazardous material inventory or confirm locations of hazardous materials in flood-prone areas or areas that may be impacted by dam failure.
- Reduce storage of hazardous materials in dam hazard areas
- Develop post-dam failure protocol to assess and clean up hazardous materials or contamination after dam failure-related flooding causes a release of hazardous materials.

First Responders

First Responders are at significant risk of severe injury and even potentially life-threatening injuries when rescuing people stuck in dangerous or life-threatening situations. Dam Failure may reduce emergency services' capacity in their response and assistance during levee failure events. To address potential vulnerabilities of first responders in the event of dam failure in the planning area, jurisdictions should consider the following mitigation actions:

- Periodically review emergency response and evacuation procedures in the event of imminent dam failure.
- Implement and maintain advanced warning systems to utilize real-time data to alert communities of impending dam failure and areas under evacuation orders.
- Establish clear evacuation routes, procedures, and operations considering those with limited transportation options, underserved communities, and residents with limited mobility.

Continuity of Operations

Dam Failure can disrupt the affected area's normal operations and create catastrophic barriers to recovery associated with damaged infrastructure, facilities, property, and critical facilities. Loss of power, disruption of communication, and reduced ability to respond to emergencies will significantly reduce the capacity to continue normal operations in the event of Dam failure. To address potential vulnerabilities of continuity of operations in the event of dam failure in the planning area, jurisdictions should consider the following mitigation actions:

- Schedule regular reviews and updates of Continuity of Operation Plans (COP) plans based on new risks, lessons learned from past dam failure events, and operation changes.
- Develop an inventory of critical resources, personnel, equipment, and supplies available during dam failure recovery and assess which resources are located primarily in high-hazard dam areas to account for resources that may be damaged or destroyed post-dam failure events.

Climate Change

Climate and weather pattern changes are expected to lead to more severe storm events, likely increasing the risk of dam overtopping, structural damage, or other failures. In addition, hydraulic structures designed to current standards may not be sufficient to handle future climate change-driven conditions of more intense rainfall and runoff. Since the likelihood of dam failure depends on many factors and climate considerations, detailed projections of future changes in the frequency of dam failures cannot be made with any degree of confidence.

Cascading Impacts

In the context of high- and intermediate-hazard dams, cascading impacts refer to a chain reaction of different disasters. For example, a drought causes loss of vegetation that may cause additional stormwater runoff and erosion, leading to dam overtopping and/or silting. Due to a lack of available data and software modeling capabilities, the probability of the other 14 hazards identified in this plan having a cascading impact that results in a dam failure were not analyzed

quantitatively. Cascading impacts are briefly discussed in the list below for each hazard this plan covers. The list identifies whether the planning committee and relevant literature judge a hazard unlikely to have a significant cascading impact on dams.

Flood: river flooding can lead to increased water pressure on a dam, potentially causing overtopping or structural failure and creating a cascading impact.

Levee Failure: levee failure could increase downstream water flow, adding pressure on nearby dams and heightening the risk of a high-hazard dam failure.

Wildfire: wildfires can remove vegetation, increasing runoff and erosion, which may contribute to dam overtopping or silting, leading to potential failure.

Tornado: tornadoes could damage a dam's infrastructure or surrounding vegetation but are less likely to cause a cascading impact that would directly cause dam failure.

Earthquake: earthquakes can weaken a dam’s structural integrity or trigger landslides in the reservoir, increasing the risk of dam failure.

Landslide: a landslide into a reservoir can displace water, causing rapid increases in water levels and potentially overtopping the dam.

Winter Storm and Freeze: rapid snowmelt can lead to increased runoff, contributing to overtopping and potential dam failure. Ice buildup can block spillways or cause structural damage, increasing the likelihood of overtopping or dam failure.

Severe Thunderstorm: thunderstorm winds alone are unlikely to cause cascading impacts that lead to dam failure, though associated heavy rain could increase the risk.

Erosion: ongoing erosion can weaken a dam's structural integrity over time, eventually leading to a potential failure if not addressed.

Hail: hail alone is unlikely to cause cascading impacts that result in dam failure, as it does not significantly affect water levels or structural integrity.

Drought: a prolonged drought can weaken a dam's foundation or cause cracks, potentially leading to structural failure when water levels rise again.

Hurricane and Tropical Storm: hurricane winds can cause significant structural damage or increase water inflow from heavy rainfall, raising the risk of dam failure.

Extreme Heat: prolonged extreme heat can exacerbate structural weaknesses in dam components, increasing the risk of dam failure. This may lead to downstream flooding and severe water quality degradation, which can affect ecosystems and public health.

Lightning: lightning strikes can disrupt dam monitoring systems and damage critical infrastructure, potentially impairing the ability to respond to emergencies and increasing the risk of an unmonitored or uncontrolled dam breach.

Hazardous Materials Incident: a hazardous materials spill near a dam or reservoir could contaminate the water supply and damage structural integrity, creating a cascading risk of environmental pollution, public health crises, and downstream flood hazards.

5.16. Erosion

5.16.1. Background

Erosion is the gradual breakdown and movement of land due to both physical and chemical processes of water, wind, and general meteorological conditions. Natural, or geologic, erosion has occurred since the Earth's formation and continues at a very slow and uniform rate each year.

There are two types of soil erosion: wind erosion and water erosion. Wind erosion can cause significant soil loss. Wind blowing across sparsely vegetated or disturbed land can pick up soil particles and carry them through the air, thus displacing them. Water erosion can occur over land or in streams and channels. Water erosion that takes place over land may result from raindrops, shallow sheets of water flowing off the land, or shallow surface flow, which becomes concentrated in low spots. Stream channel erosion may occur as the volume and velocity of water flow increases enough to cause movement of the streambed and bank soils. Major storms, such hurricanes in coastal areas, may cause significant erosion by combining high winds with heavy surf and storm surge to significantly impact the shoreline.

An area's potential for erosion is determined by four factors: soil characteristics, vegetative cover, topography climate or rainfall, and topography. Soils composed of a substantial percentage of silt and fine sand are most susceptible to erosion. As the clay and organic content of these soils increases, the potential for erosion decreases. Well-drained and well-graded gravels and gravel-sand mixtures are the least likely to erode. Coarse gravel soils are highly permeable and have a good capacity for absorption, which can prevent or delay the amount of surface runoff. Vegetative cover can be helpful in controlling erosion by shielding the soil surface from falling rain, absorbing water from the soil, and slowing the velocity of runoff. Runoff is also affected by the topography of the area including size, shape, and slope. The greater the slope length and gradient, the more potential an area has for erosion.

5.16.2. Location

Erosion in the Iredell Rowan Region is typically caused by flash flooding events. Unlike coastal areas, where the soil is composed of fine-grained particles such as sand, Iredell Rowan soils have much greater organic matter content. Furthermore, extensive vegetation also helps to prevent erosion in the area. Erosion occurs in the Iredell Rowan Region, particularly along the banks of rivers and streams, but it is not an extreme threat to any of the participating counties and jurisdictions. No areas of concern were reported by the planning committee.

5.16.3. Extent

The extent of erosion can be defined by the measurable rate of erosion that occurs over time for a specific land area. No data is currently available with which to determine magnitudes or severity of erosion hazard areas within the Region and all its jurisdictions. A mitigation strategy regarding erosion identification, tracking and mapping will be considered in future mitigation actions for the Region.

5.16.4. Historical Occurrences

Several sources were investigated to identify areas of erosion in the Iredell Rowan Region. This includes searching local newspapers, interviewing local officials, and reviewing previous hazard mitigation plans. Little information could be found. The Rowan County Code includes a chapter on Soil Erosion and Sedimentation, but there were no reported incidents of major erosion in the region.

5.16.5. Probability of Future Occurrences

Because there are no documented erosion events in the planning area, there is not sufficient data to support a future probability estimate.

5.16.6. Erosion Hazard Vulnerability and Impact

Based upon a lack of historical events, relevant GIS data, and any immediate threat to life or property, a detailed vulnerability assessment has not been conducted for this hazard. There were no reported erosion hazards in the Region and all its jurisdictions. Any mitigation actions developed for this hazard therefore should be based on addressing data limitations, education and awareness programs, and/or any jurisdiction-specific concerns that may be addressable through an appropriate mitigation project.

5.16.7. Future Vulnerability: Problem Statements

People

Erosion can decrease agricultural productivity, ecosystem degradation, and reduced drainage during flooding or heavy rain events. Erosion can also cause decreased water quality and decreased availability of drinking water sources because of increased sedimentation in waterways.

Changes in Development or Housing Characteristics

Increased development and expansion of infrastructure can contribute to increased erosion by reducing the rate of infiltration of water, accelerating soil erosion, and decreasing the ability of rain to drain during flooding or rain events. Increased development can also impact the topsoil quality in areas of new development, leading to degradation of ecosystems and soil quality.

Economy

Because erosion can lead to degradation of soil quality, there could be an economic impact to agricultural production where less productive soil, reduced water quality, and potentially increased cost of water due to limitation of water use due to quality, there could be an increased

in costs associated with agricultural operations. As a result, the price of water may increase for residents in the planning area as the availability of clean, high quality drinking water may be less abundant.

Erosion can also have negative impacts on the planning area by increasing flooding due to buildup of sediment in storm drains. This could require the planning area to expand their stormwater control infrastructure, leading to added costs for residents, businesses, and local governments. As a result, the planning area should consider addressing the issue of erosion by implementing the following mitigation measures:

- Requiring new developments to utilize erosion control measures such as vegetative cover, using drainage control measures, and limiting the amount of soil that gets disturbed during development.

Natural Environment

Erosion can cause increased sedimentation, decreased water quality, decreased soil quality, and desertification which can greatly impact ecosystems in the planning area. Wind erosion specifically can cause increased soil loss and increased sedimentation. Water erosion occurs over land, rivers, or stream where movement of the streambed or bank soils is eroded into the waterway thereby polluting the water with increased sediment which causes decreases in oxygen levels and degrades the health of the overall ecosystem. To limit the damage to the natural environment and prevent erosion, the planning area should consider the following mitigation measures:

- Consider stream restoration projects to prevent further stream erosion and improve the ecosystem health in the planning area.
- Provide incentives for new development to improve or maintain soil quality to reduce future levels of erosion.

First Responders

Erosion is not expected to impact the first responders in the planning area, but a decreased supply of water may reduce the amount of water available for first responders to control or put out wildfires.

Continuity of Operations

There is no expected impact to continuity of operations caused by erosion in the planning area.

Climate Change

Since erosion in this context is associated primarily with extreme runoff and flood events, and to a lesser extent extreme wind events, it is likely that the increasing frequency or intensity of these events because of climate change will cause greater erosion problems in the future. Climate can affect the amount of runoff, especially the frequency, intensity, and duration of rainfall and storms. When rainstorms are frequent, intense, or of long duration, erosion risks are

high. Seasonal changes in temperature and rainfall amounts define the year's highest erosion risk.

During the past 20 years, the importance of erosion control has gained the increased attention of the public. Implementation of erosion control measures consistent with sound agricultural and construction operations is needed to minimize the adverse effects associated with harmful chemicals run-off due to wind or water events. The increase in government regulatory programs and public concern has resulted in a wide range of erosion control products, techniques, and analytical methodologies in the United States. The preferred method of erosion control in recent years has been the restoration of vegetation.

5.17. Flood

5.17.1. Background

Flooding is the most frequent and costly natural hazard in the United States and is a hazard that has caused more than 10,000 deaths since 1900. Nearly 90 percent of presidential disaster declarations result from natural events where flooding was a major component.

Floods generally result from excessive precipitation and can be classified under two categories: general floods, precipitation over a given river basin for a long period of time along with storm-induced wave action, and flash floods, the product of heavy localized precipitation in a short time over a given location. The severity of a flooding event is typically determined by a combination of several major factors, including stream and river basin topography and physiography, precipitation and weather patterns, recent soil moisture conditions, and the degree of vegetative clearing and impervious surface.

General floods are usually long-term events that may last for several days. The primary types of general flooding include riverine, coastal, and urban flooding. Riverine flooding is a function of excessive precipitation levels and water runoff volumes within the watershed of a stream or river. Coastal flooding is typically a result of storm surge, wind-driven waves, and heavy rainfall produced by hurricanes, tropical storms, and other large coastal storms. Urban flooding occurs where manmade development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff.

Most flash flooding is caused by slow-moving thunderstorms in a local area or by heavy rains associated with hurricanes and tropical storms. However, flash flooding events may also occur from a dam or levee failure within minutes or hours of heavy amounts of rainfall or from a sudden release of water held by a retention basin or other stormwater control facility. Although flash flooding occurs most often along mountain streams, it is also common in urbanized areas where much of the ground is covered by impervious surfaces.

The periodic flooding of lands adjacent to rivers, streams, and shorelines (land known as a floodplain) is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals. The recurrence interval of a flood is defined as the average time interval, in years, expected between a flood event of a particular magnitude and an equal or larger flood. Flood magnitude increases with increasing recurrence interval.

Floodplains are designated by the frequency of the flood that is large enough to cover them. For example, the 10-year floodplain will be covered by the 10-year flood and the 100-year floodplain by the 100-year flood. Flood frequencies, such as the 100-year flood, are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur. Another way of expressing the flood frequency is the chance of occurrence each year, which is the percentage of the probability of flooding each year. For example, the 100-year flood has a 1 percent chance of occurring in any given year and the 500-year flood has a 0.2 percent chance of occurring in any given year.

5.17.2. Location

There are areas in the Iredell Rowan Region that are susceptible to flood events. Special flood hazard areas in the Iredell Rowan Region were mapped using GIS FEMA Digital Flood Insurance Rate Maps (DFIRM)[59]. This includes Zone AE (1-percent annual chance floodplain with elevation) and Zone X500 (0.2-percent annual chance floodplain). According to GIS analysis, of the 1,122 square miles that make up the Iredell Rowan Region, there are around 97 square miles of land in zone AE (1-percent annual chance floodplain/100-year floodplain) and almost 2 square miles of land in zone X500 (0.2- percent annual chance floodplain/500-year floodplain). There are 1,023 mi^2 of area in the planning area in the flood zone X, which is the area where flood risk is between 1% and 0.2% annually, outside of the 500-year floodplain, and protected by 100-year floods by a levee. The below figures show the boundaries of the floodway, 1-percent-annual-chance and 0.2-percent-annual-chance floods, based on effective DFIRM data. These are the three mapped flood hazard areas used as the basis for this analysis.

Table 5- 60: Area of zones within Special Flood Hazard Areas (SFHAs) in the planning area in square miles

County	Zone Type			
	0.2% Annual Chance Flood Hazard	AE	X	Total
Iredell	1.09	49.99	546.89	597.97
Rowan	0.89	46.97	475.95	523.80
Total Area	**1.98 mi^2**	**96.96 mi^2**	**1,022.83 mi^2**	**1,121.77 mi^2**

Flood boundaries depicted in the maps in Figure 5- 81 to Figure 5- 97 were downloaded from the FEMA Mapping Service Center and the boundaries are from the latest effective studies that were conducted in 2009.

[59] The county-level DFIRM data used for the Iredell Rowan Region were updated in 2009 for each of the counties.

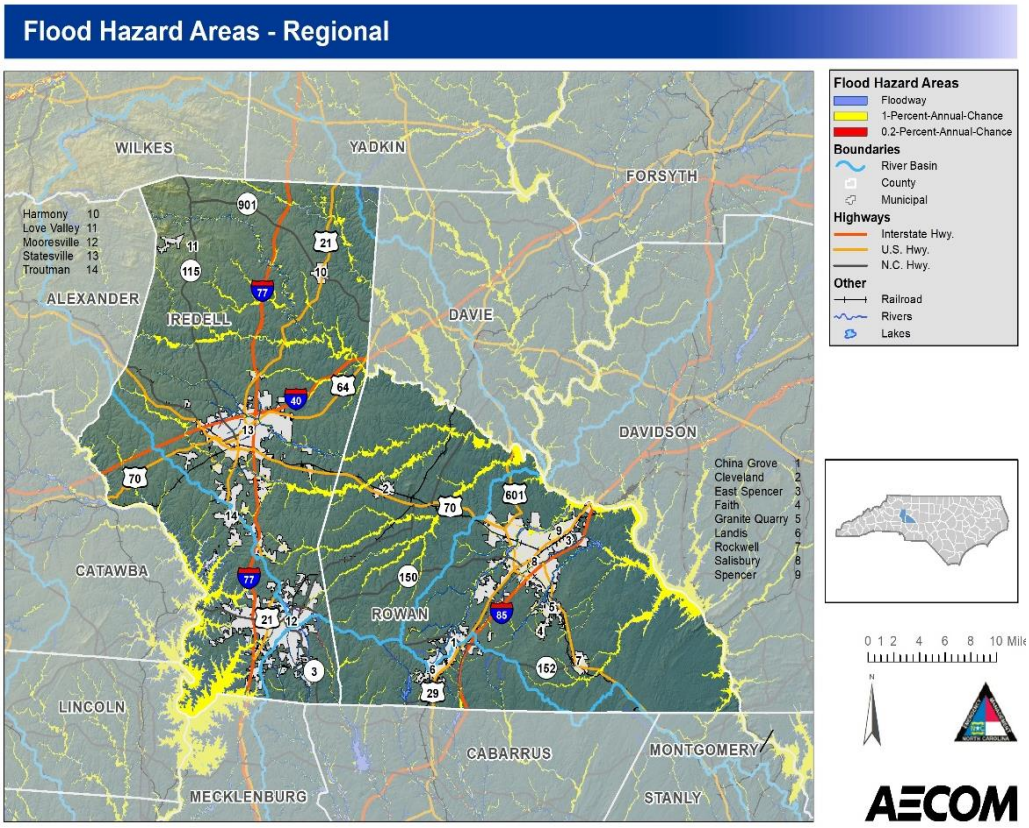


Figure 5- 81: Flood hazard areas in the planning area

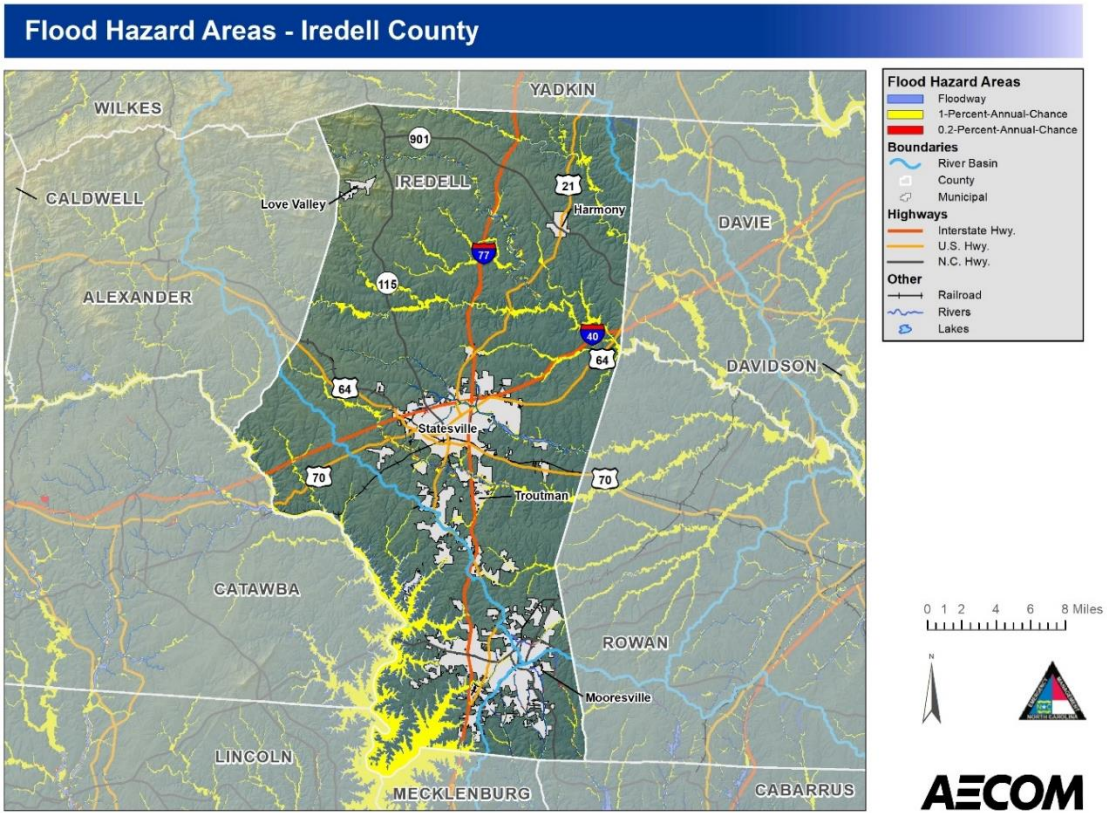


Figure 5- 82: Flood hazard areas in the planning area

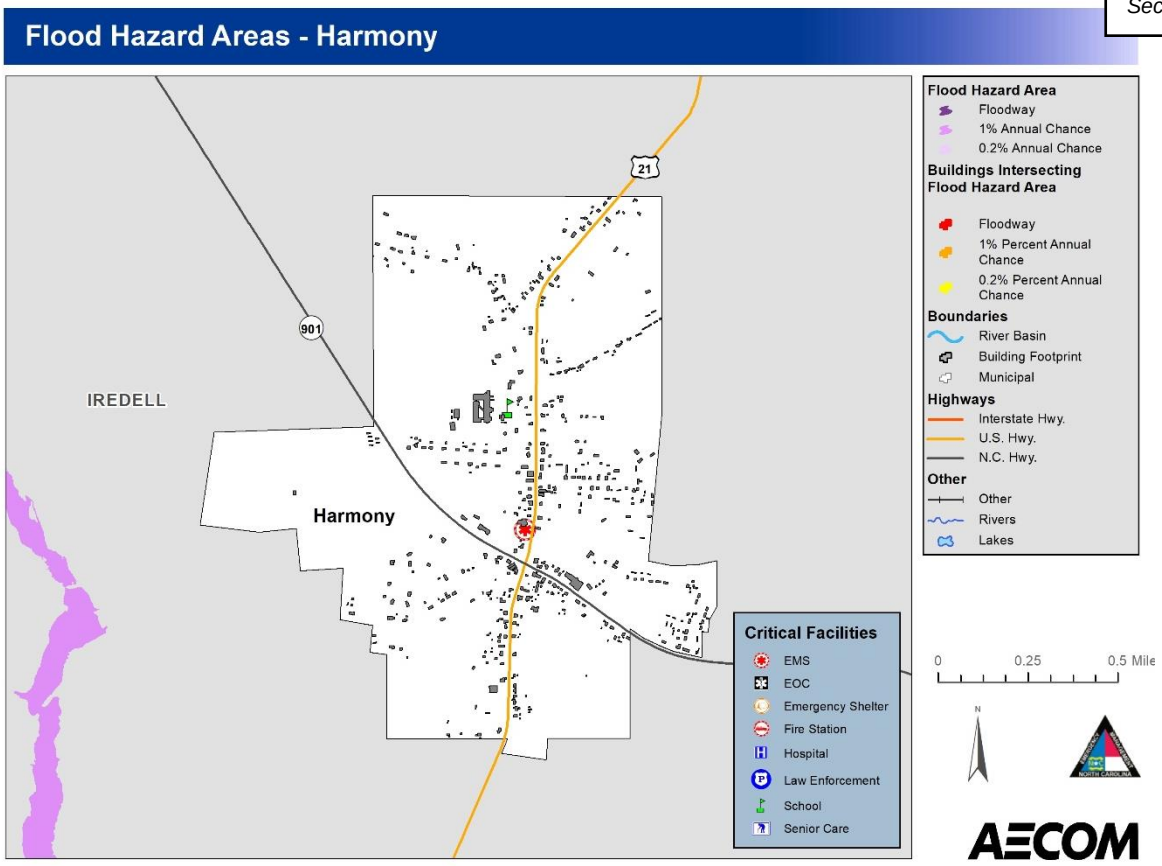


Figure 5- 83: Flood hazard areas in Harmony

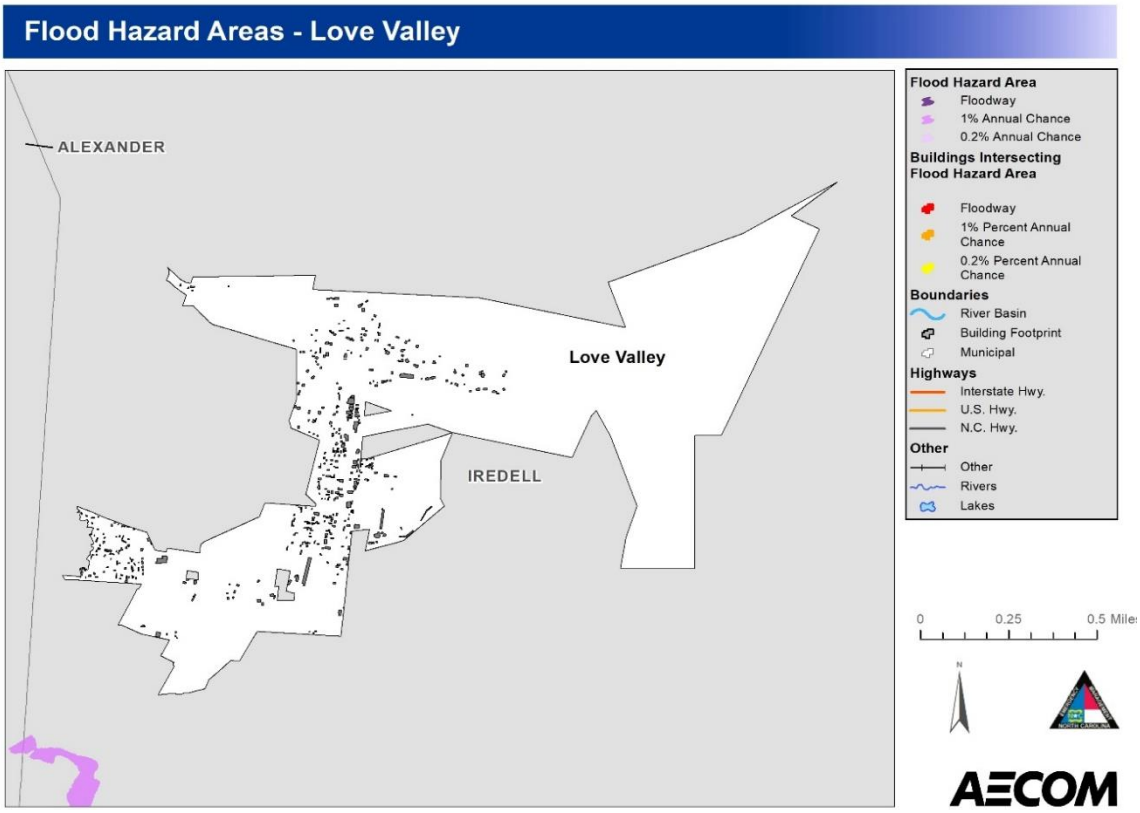


Figure 5- 84: Flood hazard areas in Love Valley

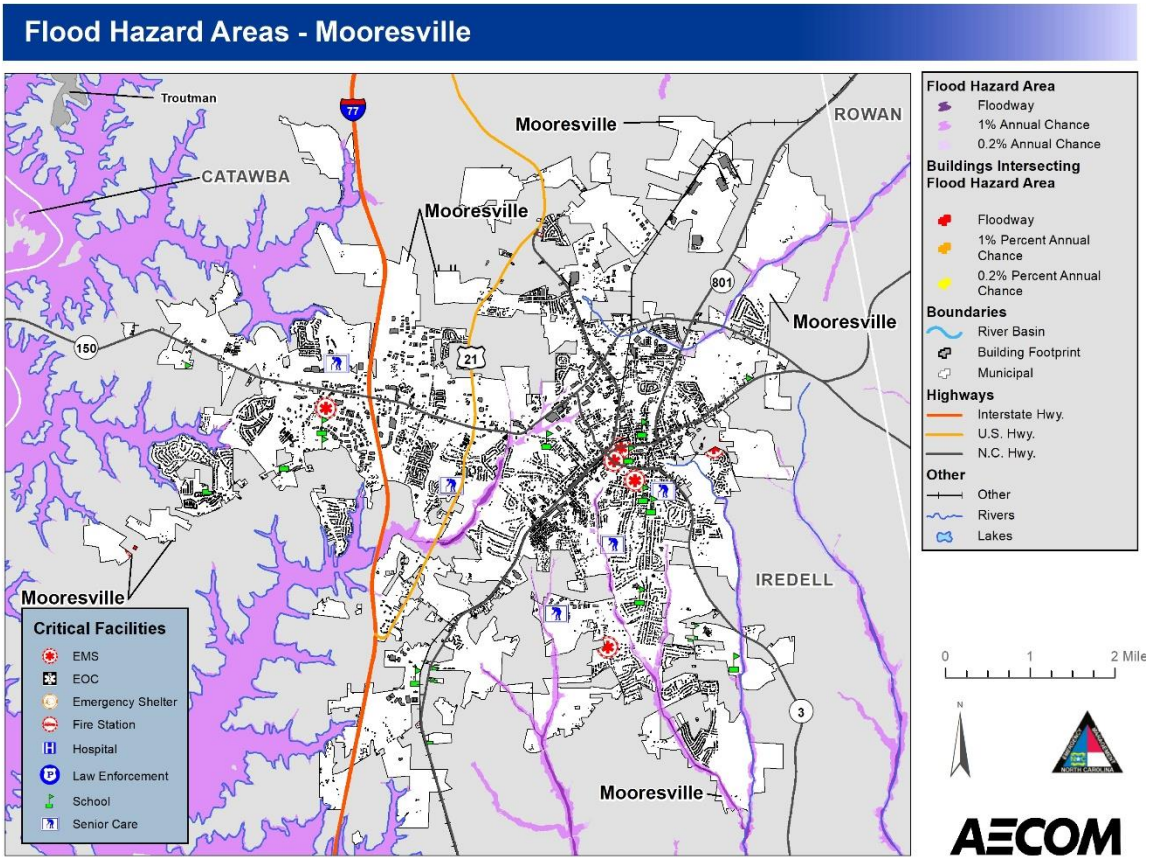


Figure 5- 86: Flood hazard areas in Mooresville.

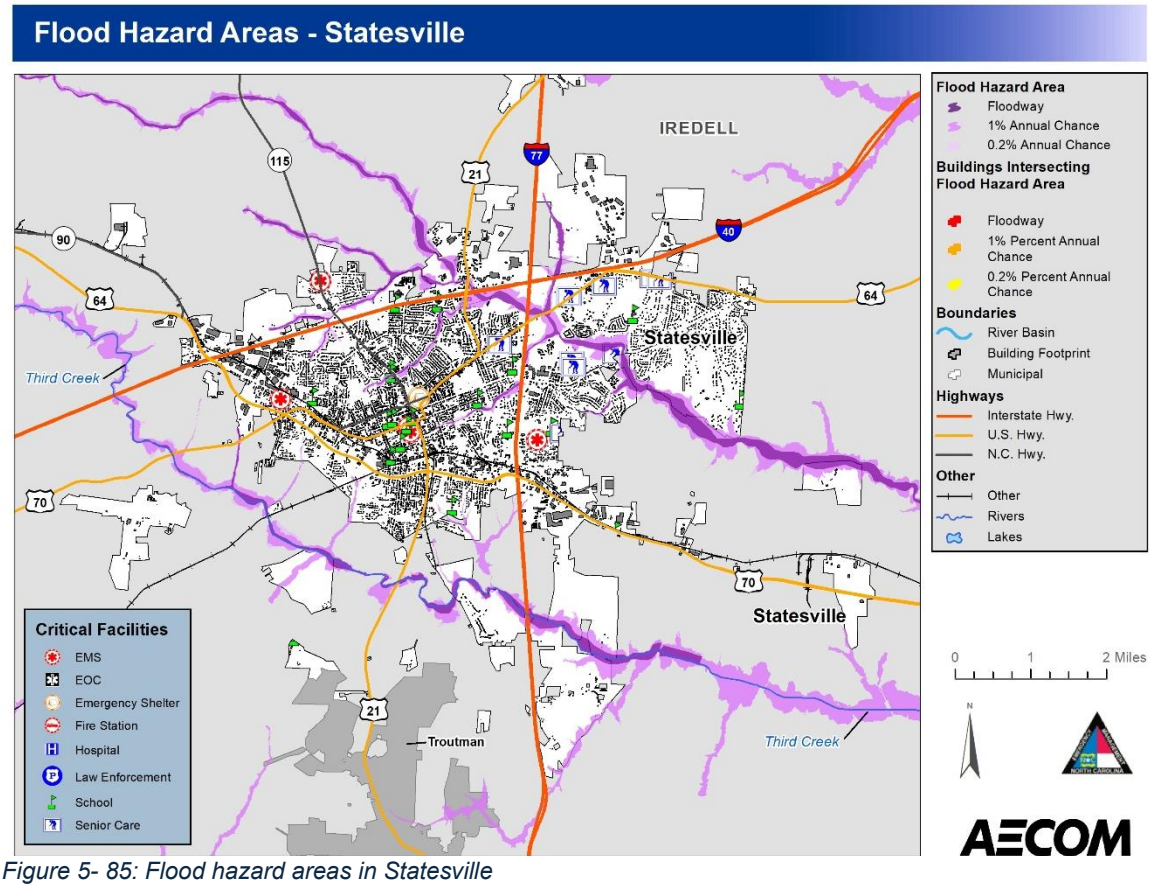


Figure 5- 85: Flood hazard areas in Statesville

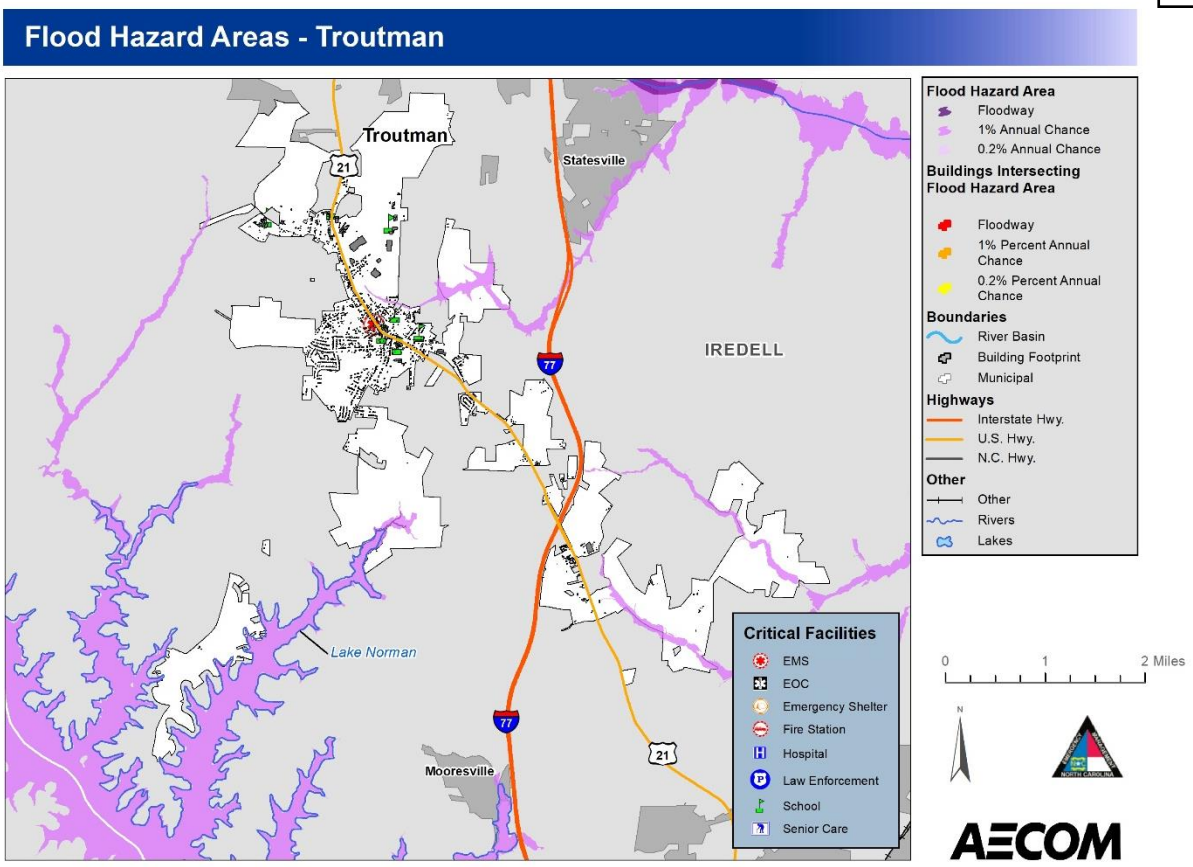


Figure 5- 88: Flood hazard areas in Troutman

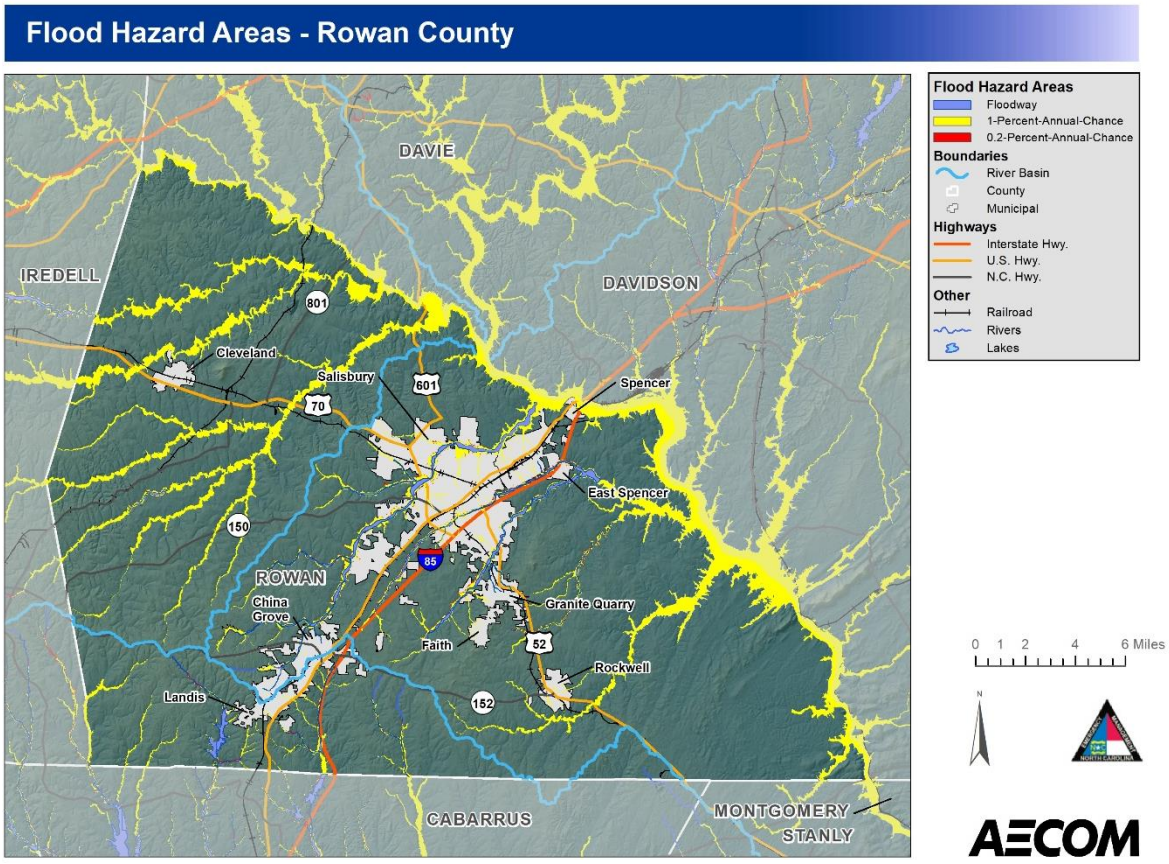


Figure 5- 87: Flood hazard areas in Rowan County

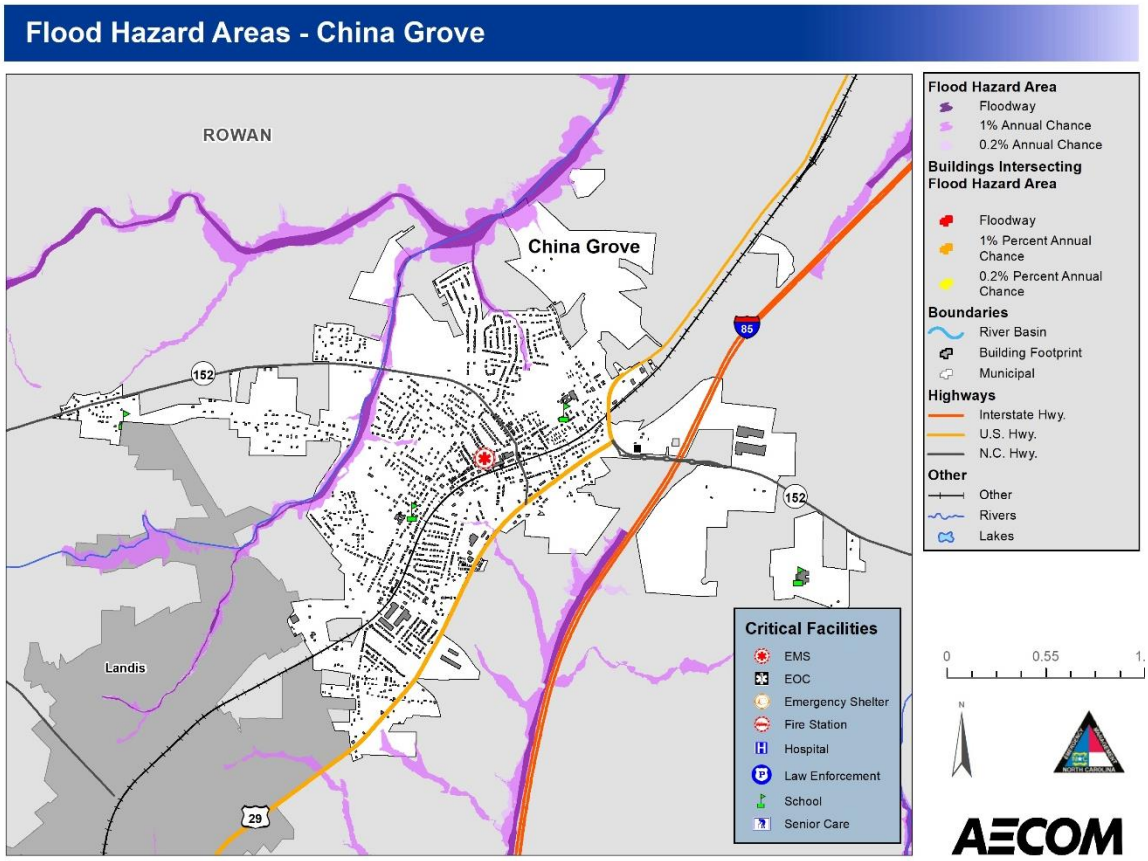


Figure 5- 90: Flood hazard areas in China Grove

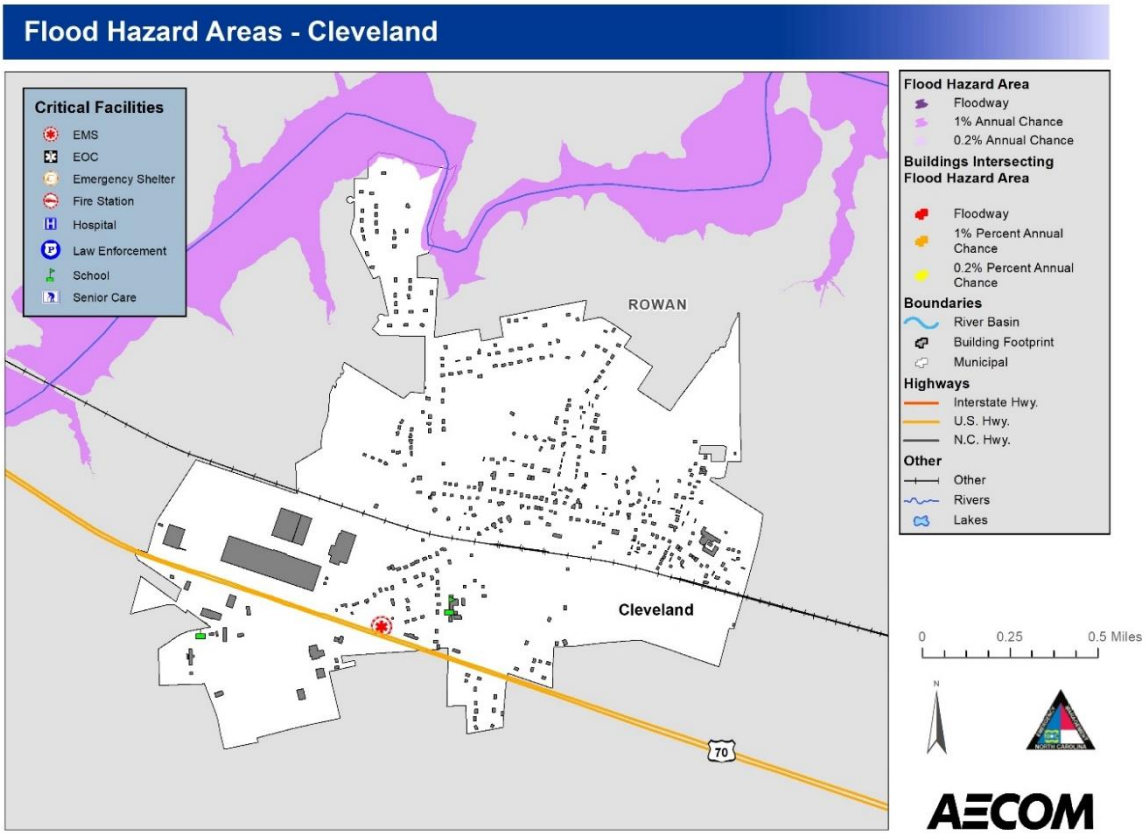


Figure 5- 89: Flood hazard areas in Cleveland

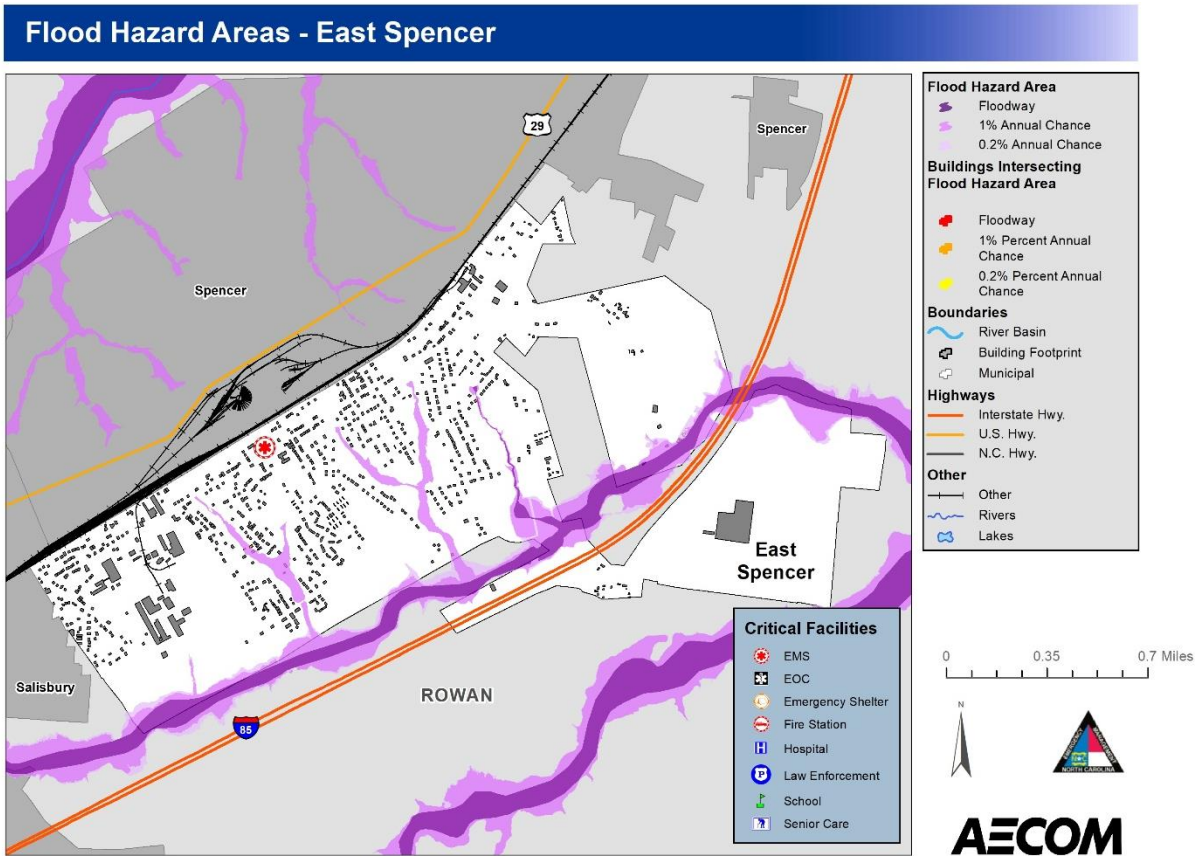


Figure 5- 92: Flood hazard areas in East Spencer

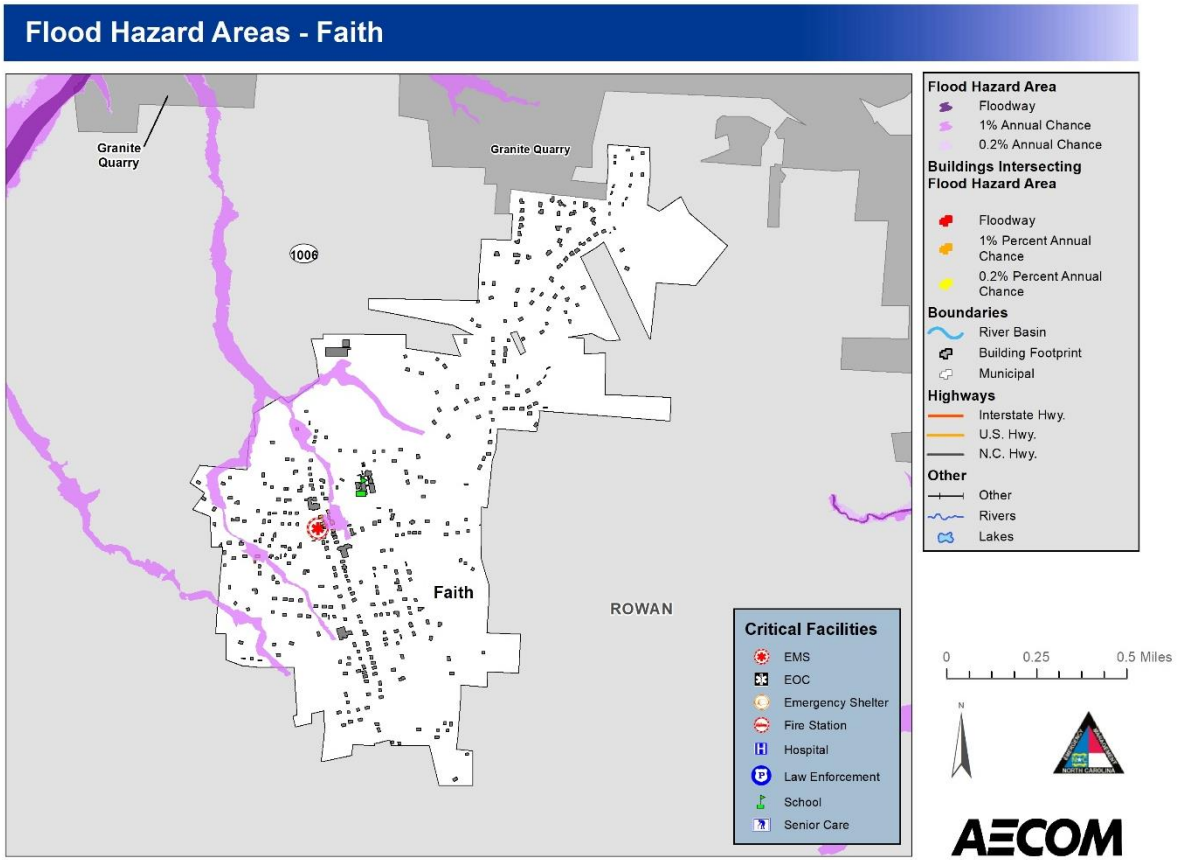


Figure 5- 91: Flood hazard areas in Faith

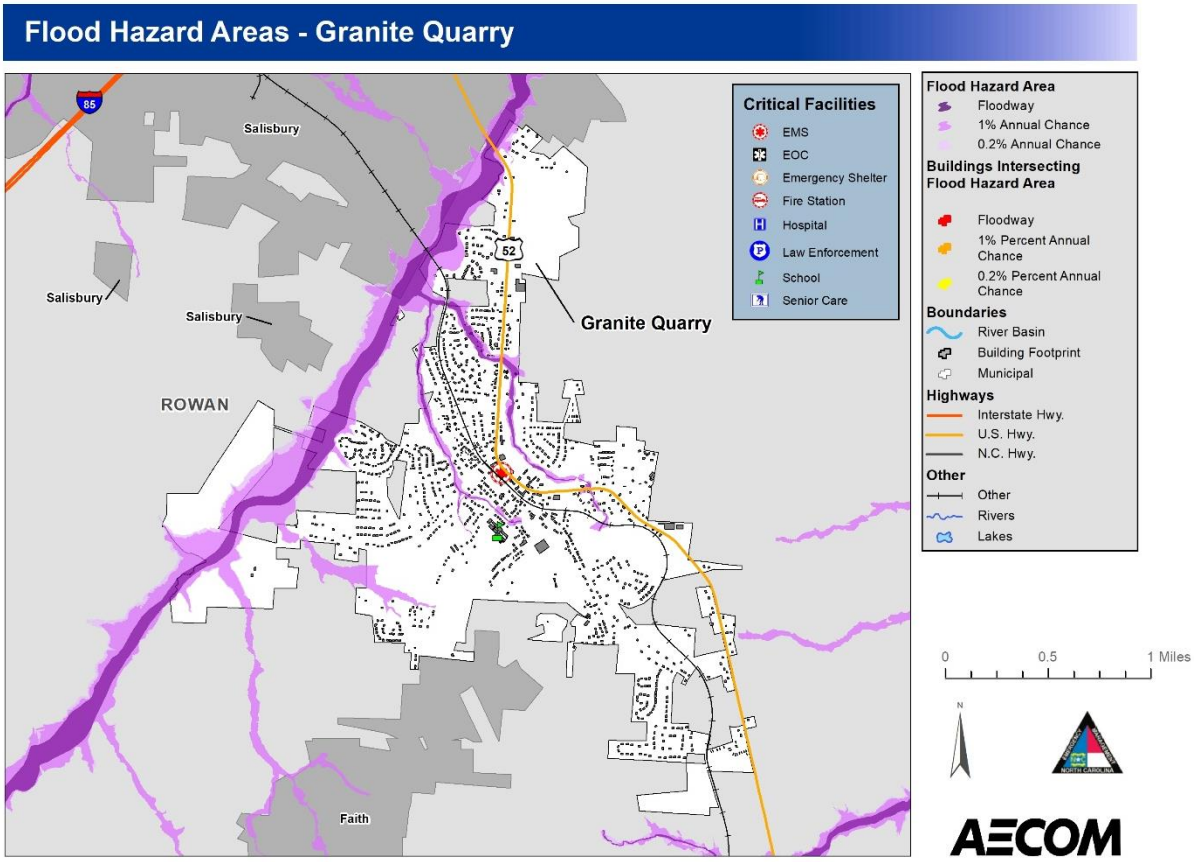


Figure 5- 94: Flood hazard areas in Granite Quarry

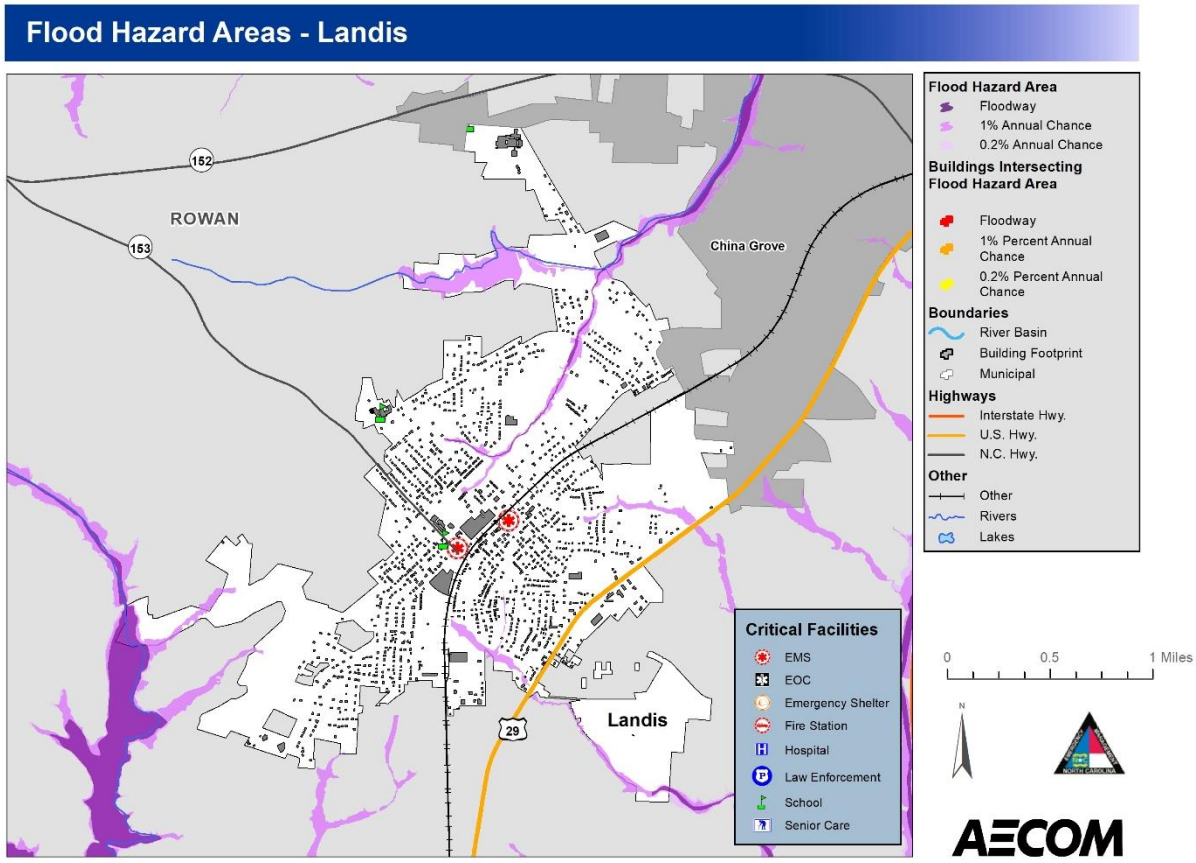


Figure 5- 93: Flood hazard areas in Landis

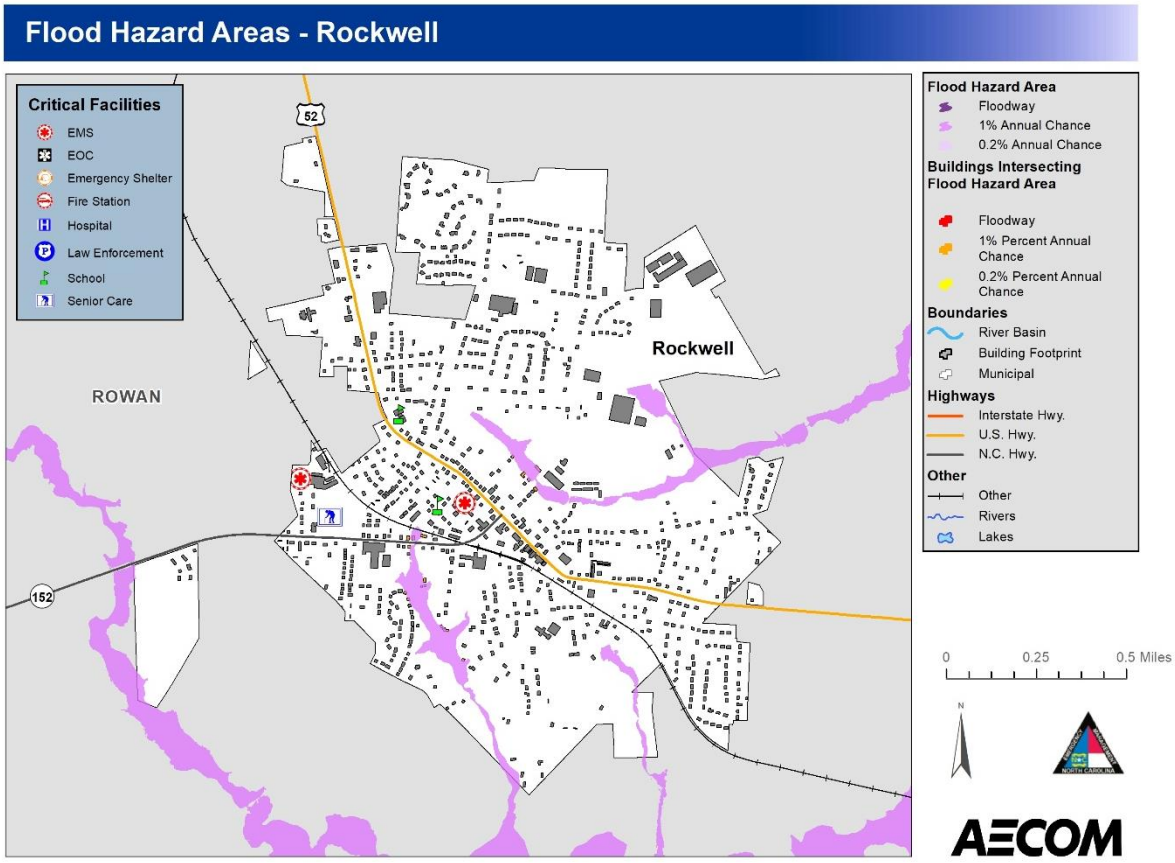


Figure 5- 96: Flood hazard areas in Rockwell

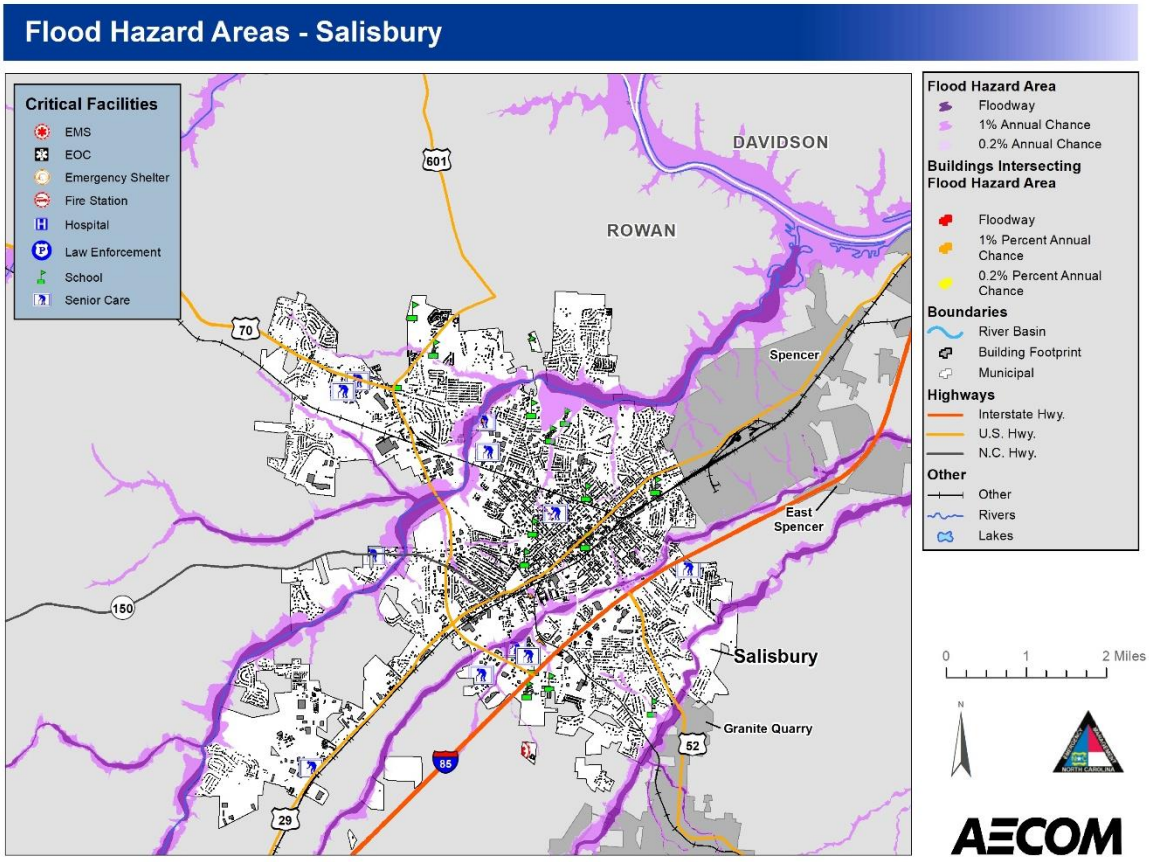


Figure 5- 95: Flood hazard areas in Salisbury

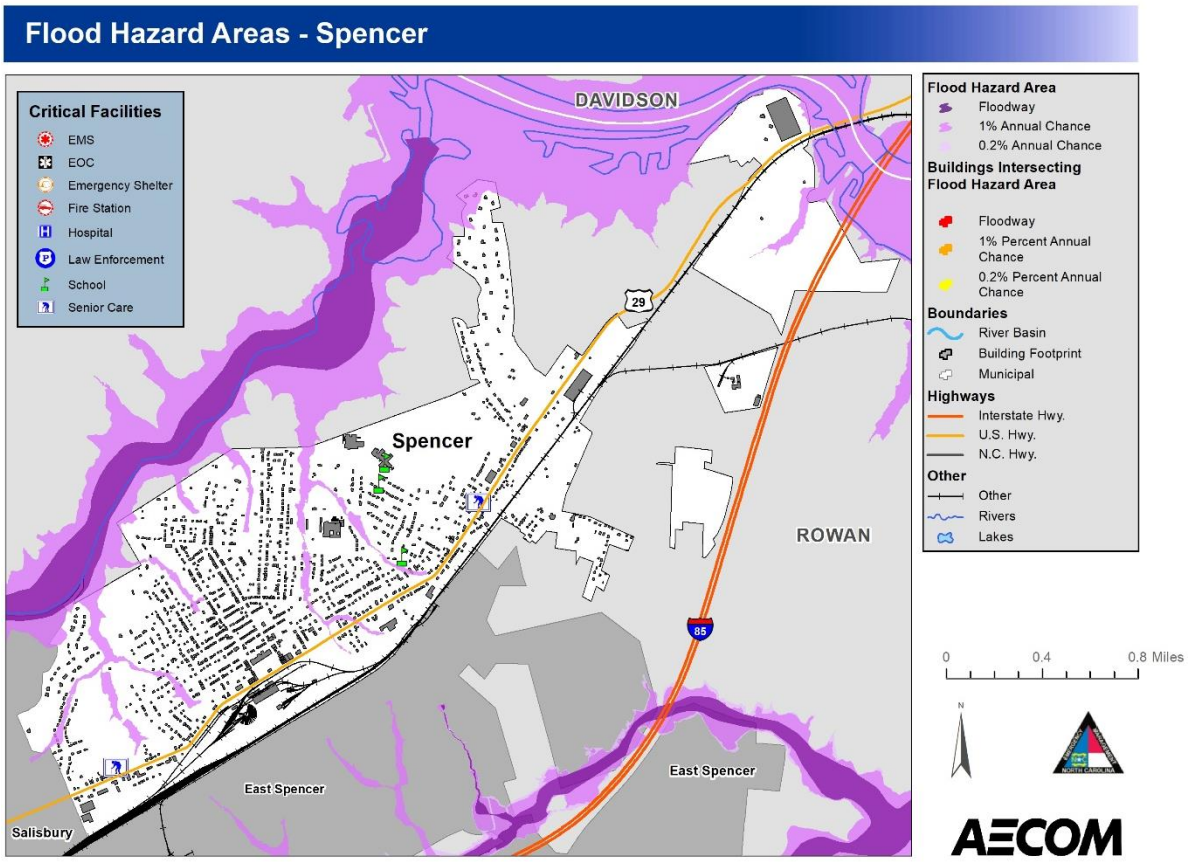


Figure 5- 97: Flood hazard areas in Spencer

These flood zone values account for 8.8 percent of the total land area in the Iredell Rowan Region. It is important to note that while FEMA digital flood data is recognized as best available data for planning purposes, it does not always reflect the most accurate and up-to-date flood risk. Flooding and flood- related losses often do occur outside of delineated special flood hazard areas.

5.17.3. Extent

The following table provide peak river stage data according to USGS which shows the highest recorded peak river stage for all jurisdictions.

Table 5- 61: Peak streamflow in Iredell and Rowan County from USGS[60]

Hydrologic Unit Code (HUC)	Site Number	Station Name	Peak Data Begin Date	Peak Data End Date	Gage Height (Ft)	Stream-Flow (Cfs)	Date of Peak
03040102	2117410	McClelland Creek Near Statesville, NC	1954-01	1976-06-27	20.1	435	1957-09-07
03040102	2117500	Rocky Creek at Turnersburg, NC	1941-07-17	1971-02-23	15.77	7,240	1964-10-16
03040102	2118500	Hunting Creek Near Harmony, NC	1952-03-11	2023-04-28	26.46	22,400	2020-11-12
03050101	214244102	Catawba River Bl Lookout Shoals Dam Nr Sharon, NC	2017-04-24	2024-09-28	33.58	120,000	2024-09-28

[60] US Geological Survey. (n.d.). USGS surface water for North Carolina: Peak streamflow [Dataset]. Retrieved December 18, 2024, from https://nwis.waterdata.usgs.gov/usa/nwis/peak

Hydrologic Unit Code (HUC)	Site Number	Station Name	Peak Data Begin Date	Peak Data End Date	Gage Height (Ft)	Stream-Flow (Cfs)	Date of Peak
03050101	214253830	Norwood Creek Nr Troutman, NC	1984-04-10	2005-10-08	9.20	1,480	1997-04-28
03040102	2118000	South Yadkin River Near Mocksville, NC	1929-10-03	2022-12-16	25.56	20,900	2020-11-13
03040102	2120500	Third Creek at Cleveland, NC	1916-07	1971-05-13	22.50		1916-07
03040102	2120780	Second Creek Near Barber, NC	1980-01-18	2022-12-23	18.58	7,670	2020-02-07
03040103	2120820	Deal Branch Near Salisbury, NC	1954-01-22	1970-10-30	25.1	1,980	1957-11
03040102	2121000	Yadkin River Near Salisbury, NC	1896-07-10	1927-02-21	23.8	121,000	1916-07-18

Table 5- 62: USGS Peak Streamflow for the planning area

Gage Datum (if available)	USGS Site Number	County	Drainage Area (mi^2)	HUC	Date	Gage Height (Ft)	Stream-Flow (Cfs)
--	2117410	Iredell	1.22	03040102	9/7/1957	20.1	435
					2/22/1971	19.49	380
					12/07/1971	18.92	330
					8/5/1961	18.74	315
					3/14/1975	18.73	315
724.10 ft above NAD27	2117500		101.00	03040102	10/16/1964	15.77	7,240
					1/22/1954	13.69	6,080
					8/10/1970	13.06	5,440
					9/18/1945	12.08	5,120
					9/17/1957	11.68	4,620
734.18 ft above NADV88	2118500		155	03040102	11/12/2020	26.46	22,400
					9/22/1979	25.05	14,800
					6/21/1972	24.30	12,700
					10/17/1964	21.78	9,780
					2/6/2020	21.30	11,600
747.60 ft above NAVD88	214244102		1,450	03050101	9/28/2024	33.58	120,000
					11/12/2020	30.59	65,900
					6/9/2019	30.21	64,200
					2/6/2020	23.89	37,600
					5/31/2018	19.69	22,700
761.09 ft above NGVD29	214253830		7.18	03050101	4/28/1997	9.20	1,480
					10/8/2005	9.01	1,360
					10/1/1989	8.22	1,320
					12/10/2004	8.14	901
					9/28/2004	8.08	875
	2118000	Rowan	306	03040102	11/13/2020	25.56	20,900

Gage Datum (if available)	USGS Site Number	County	Drainage Area (mi²)	HUC	Date	Gage Height (Ft)	Stream-Flow (Cfs)
662.90 ft above NAVD88					10/3/1929	22.6	--
					2/7/2020	21.57	14,500
					3/21/2003	20.28	14,900
					9/28/2024	19.79	12,400
684.47 ft above NGVD29	2120500		87.40	03040102	01/7/1916	22.50	--
					9/19/1945	15.76	3,080
					9/30/1944	15.31	2,890
					1/24/1954	14.28	2,260
					10/17/1964	13.54	2,360
642.53 ft above NAVD88	2120780		118	03040102	2/7/2020	18.58	7,670
					10/12/2018	18.13	7,110
					8/28/1995	17.28	8,560
					4/16/1987	16.92	5,820
					11/13/2020	16.58	5,390
--	2120820		3.88	03040103	1/11/1957	25.1	1,980
					6/24/1962	22.48	1,100
					10/30/1970	22.42	1,200
					3/6/1963	21.80	900
					7/28/1959	21.20	820
610 ft above NGVD29	2121000		3,450	03040102	7/18/1916	23.8	121,000
					12/30/1901	19.70	95,200
					3/16/1912	19.00	91,000
					4/21/1901	17.60	82,600
					7/20/1919	16.90	80,000

5.17.4. Historical Occurrences

The following occurrences are flooding between 2018 and 2024 that have occurred in Iredell or Rowan County. It should be noted that only those historical occurrences listed in the NCDC database[61] are shown here and that other, unrecorded or unreported events may have occurred within the planning area during this timeframe.

According to NCDC[62], there were 11 reports of River Flooding that have occurred between 2018 and 2024 in the planning area. The estimated total loss for these occurrences is totaled as

[61] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/
[62] National Oceanic and Atmospheric Administration [NOAA]. (n.d.). Storm Events Database (By National Center for Environmental Information [NCEI]). National Center for Environmental Information. https://www.ncdc.noaa.gov/stormevents/

$303,000 of property damage and are responsible for 1 death. The following are summaries from the NCDC Storm Events Database:

1. **Flash Flooding in Turnersburg, Iredell County** - 8/2/2018

Event Narrative Summary: heavy showers and thunderstorms developed across the NC Piedmont area in the afternoon and evening. Iredell County communications reported flash flooding on the east side of Statesville and areas nearby after approximately 2.5-4 inches of rain fell over the region in a few hours. There were several creeks and streams that overflowed their banks, flooded roads, and the tributaries of Beaver Creek and its tributaries caused the most significant issues. The tributaries sent 1 to 2 feet of water over Old Mocksville Rd near the Davis Regional Medical Center, while a retaining pond near Old Mocksville Road began spilling over the dam. Part of the Old Mocksville Road was washed away near Moore Ridge Road due to flooding from the Fifth Creek. Urban flooding also occurred, with water entering basements on Broad Street and dozens of campers at a campground on Log Road southeast of Statesville were trapped by Third Creek tributaries that washed out part of the road. There were no injuries or deaths reported.

Total Property Damage: $30,000

2. **Flooding and Flash Flooding in Rockwell, Rowan County** - 9/16/2018

Event Narrative Summary: Tropical Cyclone Florence made landfall on September 15th and moved westward, causing widespread rain across NC from 4 to 10 inches across western NC. 4 to 6 inches of rain fell throughout the day in Rowan County and Rowan County Communications reported significant flooding across numerous roads causing several closures, specifically in the western parts of Rowan County including Salisbury. The high-water conditions caused by the heavy rainfall continued overnight and caused many roads to remain closed. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $5,500

3. **Flash Flooding at Statesville Airport, Iredell County** - 10/11/2018

Event Narrative Summary: On November 11th, Tropical Cyclone Michael moved northeast towards the North Carolina Piedmont. The storm brought 3 to 6 inches of rain in less than 6 hours across the area. Back Creek overflowed and caused Bethlehem Road in west Statesville to wash out after over 3 inches of rain fell within a few hours. Severe urban flooding was also reported in downtown Statesville on Broad Street.

Total Property Damage: $5,000

4. **Flooding in Scotts, Iredell County** - 6/9/2019

Event Narrative Summary: Heavy rainfall was caused by a moist upslope flow north of a stationary front, triggering widespread showers and thunderstorms across western North Carolina on the evening of June 8th. This was associated with 4 to 7 inches of rain, with some regions reporting over 10 inches of rain and flash flooding and in some regions the flooding continued until June 10th. A dam gauge showed that the Catawba River flooded upstream of the

Lookout Shoals Dam after 4 to 7 inches of rain fell in the basin above the dam in a few hours. The dam reached the highest level since August 1940 after the widespread rain. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $50,000

5. **Flooding in Houstonville, Iredell County** - 2/6/2020

Event Narrative Summary: an unusually high moisture content combined with a slow-moving frontal system led to a prolonged period of moderate and heavy rainfall across western NC. This occurred from February 5th to the early morning of February 7th, when intense rain and heavy showers with associated thunderstorms along the front caused widespread flash flooding and isolated tornadoes throughout the Piedmont region. The stream gauge on Huntington Creek in Harmony reported that the flood stage was exceeded after 4 to 5 inches of rain in approximately 24 hours. This caused several roads to be flooding by Hunting Creek and tributaries such as Sawmill Road, Powell Bridge Road, and Houstonville Road. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $1,000

6. **Flash Flooding in Milford Hills, Rowan County** - 8/31/2020

Event Narrative Summary: Showers and thunderstorms developed near a stationary from across the NC Piedmont. Damaging winds occurred in Union County in the morning and flash flooding developed in Rowan County in the afternoon. An emergency manager reported that flash flooding occurred along Jump and Run Branch on the north side of Salisbury after 2 to 4 inches of rain fell over the basin in a few hours. Several roads were flooded and an apartment building on Wellington Hills Circle was also affected. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $50,000

7. **Flooding and Flash Flooding in Iredell County and Rowan County -**11/12/2020 to 11/13/2020

Event Narrative Summary: Tropical Cyclone Eta brough continued rain which caused widespread flash flooding and mainstem river flooding across NC. The storm brought widespread totals of 4 to 6 inches of rain across NC, and higher in the foothills of the Piedmont region of NC, which also led to widespread flash flooding across of the South Yadkin River Basin in Iredell County. 4.5 to 6 inches of rain fell, with most of the precipitation falling in a three-hour span of time. A stream gauge on the Hunting Creek in Harmony showed substantial flooding after 4.5 to 5.5 inches of rain over 24 hours.

Multiple roads along the creek were flooded, including Powell Bridge Road and a tributary of the South Yadkin River overflowed onto White Oak Branch Road in the northern part of the county. Several roads were closed due to flooding, primarily from the South Yadkin River and in the far northwest part of the county a section of a bridge collapsed. Saturated soil caused a tree to fall

onto a home in the Union Grove community which caused significant damage. A person was also killed when their vehicle hydroplaned on Highway 15.

Flash flooding was reported across northern and central Rowan County where 3 to 5 inches of rain fell in 3 hours, with Second Creek overflowing and flooding low-lying areas near Cleveland. Tributaries such as Winthrow Creek caused flooding on multiple roads south of Highway 70 and Grants Creek also flooded near Salisbury. Multiple roads in Rowan County near the upper reaches of High Rock Lake were inundated, including some campgrounds.

Total Property Damage: $140,000

8. **Flash Flooding in Kannapolis, Rowan County -** 6/20/2023

Event Narrative Summary: Heavy rain resulted from waves of showers near a stalled front near the Blue Ridge escarpment which was triggered by an upslope flow. An emergency manager reported flash flooding in southwest Rowan County after 4 to 5 inches of rain fell a few hours. Widespread flooding occurred in Kannapolis, where a small stream flooded Mable Avenue and Marie Avenue near the Cabarrus County line. A tributary of the Irish Buffalo Creek overflowed onto the Pump Station Road and another stream flooded onto West 22nd street. Northwest, East Fork flooded a road near the Iredell County line while Sills Creek inundated Jackson Road and Highway 150. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $10,000

9. **Flooding and Flash Flooding in Iredell County and Rowan County** - 1/9/2024 to 1/10/2024

Event Narrative Summary: A complex frontal system brought widespread rain and thunderstorm to western North Carolina in the afternoon of January 9th. The rainfall totaled 3 to 5 inches in about 12 hours which led to numerous reports of flooding across western NC. Isolated severe thunderstorms produced damaging wind gusts across the Piedmont region, including EF1 tornados impacting Catawba and Iredell Counties.

The fire department and local newspapers reported flash flooding throughout Iredell County due to 3 to 5 inches of rainfall. Multiple roads were submerged due to poor drainage and small stream overflow which included Old Mocksville Road, Seed House Road, Beauty Street, Crestridge Road, and Flint Road in Statesville. In the northern part of the county, Williamsburg Road, Bussel Road, Bess Road, and Linneys Mill Road, including several homes on Ridge Creek Drive, were closed or deemed inaccessible.

In Rowan County, emergency planners and newspapers also reported flash flooding caused by small streams and poor drainage after 3 to 5 inches of rain fell in 12 hours. Some roads in the county were impacted such as Old Beatty Ford Road, St Peters Church Road, and Old Mocksville Road. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $6,000

10. **Flash Flooding in Iredell County and Rowan County** - 8/8/2024

Event Narrative Summary: Tropical Storm Debby reached the NC Piedmont on August 7th and 8th, causing 4 to 7 inches of rain in most regions, with some regions reporting even more rain. The public reported that Reeds Creek overflowed in the Mooresville area after 4.5 to 5.5 inches of rain fell. Emergency management reported that Town Creek overflowed and flooded both lanes of Innes Street. Several Manufacture homes had their crawlspaces inundated and the stream gauge on Grants Creek near Rowan Mill Road exceeded its flood gauge. There were no injuries or deaths reported due to the flooding.

Total Property Damage: $5,500

5.17.5. Historical Summary of Insured Flood Losses

According to FEMA flood insurance policy records, there have been 69 flood losses reported in the Iredell Rowan Region through the National Flood Insurance Program (NFIP) between 1978 and 2018, totaling more than $1.3 million in claims payments. It should be emphasized that these numbers include only those losses to structures that were insured through the NFIP policies, and for losses in which claims were sought and received. It is likely that many additional instances of flood loss in the Iredell Rowan Region were either uninsured, denied claims payment, or not reported. In 2024, NFIP reported Total Claims Paid as $1,125,288.49 in Iredell County and $1,144,961.43 in Rowan County.

5.17.6. Repetitive Loss Properties

FEMA defines a repetitive loss property as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978. A repetitive loss property may or may not be currently insured by the NFIP. Currently there are over 140,000 repetitive loss properties nationwide.

According to FEMA records compiled as of December 2024, there was $36,662,566,800 in coverage, 131,308 policies in force, and $105,977,406 of annual premiums in force. There have been 83,390 claims under the NFIP totaling over $1.2 billion. 27,461 of those claims were closed without payment. See Table 5- 64 for policies and total insurance coverage for the NFIP in the planning area and participating NFIP communities in the planning area.

Table 5- 63: Repetitive Loss and Severe Repetitive Loss Properties in the planning area[63]

Location	Single Family Residential Building		Single Family Residence	
	Repetitive Loss	Severe Repetitive Loss	Repetitive Loss	Severe Repetitive Loss
Iredell County				
Harmony	0	0	0	0
Mooresville	0	0	1	0

[63] Federal Emergency Management Agency [FEMA]. (2024a). OpenFEMA Dataset: NFIP Multiple Loss Properties (Version V1) [Dataset]. FEMA. https://www.fema.gov/openfema-data-page/nfip-multiple-loss-properties-v1

Location	Single Family Residential Building		Single Family Residence	
	Repetitive Loss	Severe Repetitive Loss	Repetitive Loss	Severe Repetitive Loss
Love Valley	0	0	0	0
Statesville	3	0	1	0
Troutman	0	0	0	0
Unincorporated Area	1	0	1	0
Rowan County				
China Grove	0	0	0	0
Cleveland	0	0	0	0
East Spencer	0	0	0	0
Faith	0	0	0	0
Granite Quarry	0	0	1	0
Landis	0	0	0	0
Rockwell	0	0	0	0
Salisbury	0	0	5	0
Spencer	0	0	0	0
Unincorporated Area	0	0	0	0
Total	**4**	0	**9**	**0**

Table 5- 64:NFIP Total Coverage and Total Claim Dollars Paid

County	Jurisdiction	Number of Policies	Total Coverage	Total Claims Paid (all records)
Iredell	**Iredell County**	100	$31,511,000	**$1,125,288.49**
	Statesville	33	$10,522,200	
	Troutman	4	$1,917,000	
	Total	**137**	**$43,950,200**	
Rowan	**Cleveland**	1	$350,000	**$1,144,961.43**
	East Spencer	1	$250,000	
	Rowan County	54	$15,497,000	
	Faith	1	$269,000	
	Granite Quarry	17	$4,034,000	
	Landis	2	$354,000	
	Rockwell	10	$2,086,000	
	Salisbury	200	$38,747,000	
	Spencer	9	$1,703,000	
	Total	**295**	**$63,250,000**	

*Table 5- 65: Summary of flood damages in the planning area from the NCDC Storm Events Database. * indicates a weather event area that is within the planning area that is not considered a town or a city.*

County	Jurisdiction	2018 - 2023		2012 - 2017		2018 - 2023	
		Total Losses	Average losses Per year [+]	Total Losses	Average Losses Per Year	Total Injuries	Total Deaths
Iredell County	**Scotts***	$50,000	$10,000	0	0	0	0
	Statesville	$5,000	$1,000	$301,000	$60,200	0	0
	Harmony	$5,000	$1,000	$0	$0	0	0
	Houstonville*	$1,000	$200	$0	$0	0	0
	Mooresville	$500	$100	$0	$0	0	0
	New Hope*	$100,000	$20,000	$0	$0	0	0
	Oswalt*	$3,000	$600	$0	$0	0	0
	Turnersburg*	$30,000	$6,000	$0	$0	0	0
	Union Grove*	$1,000	$200	$0	$0	0	0
Rowan County	**Cleveland***	$0	$0	$1,000	$200	0	0
	Liberty*	$0	$0	$1,000	$200	0	0
	Kannapolis	$10,000	$2,000	$0	$0	0	0
	Majolica*	$12,000	$2,400	$0	$0	0	0
	Milford Hills*	$50,000	$10,000	$0	$0	0	0
	Rockwell*	$5,500	$1,100	$0	$0	0	0
	South Salisbury*	$5,000	$1,000	$0	$0	0	0
	Woodleaf*	$25,000	$5,000	$0	$0	0	0

5.17.7. Probability of Future Occurrences

According to the NRI, which utilizes riverine flooding data from 1996 to 2019, Iredell County is expected to experience 0.8 riverine flooding events per year, or 4 events every 5 years, and Rowan County is expected to experience 1.1 riverine events per year. In terms of EAL from riverine flooding, Iredell County is projected to have $273,000 of damage, while Rowan County is expected to experience $334,000 of damage per year due to riverine flooding. Despite the value of expected losses in the planning area, the planning area is at a relatively low risk of riverine flooding impacts and a relatively low risk of riverine flooding related loss. For more information about NRI riverine flooding impacts by census tract, see Appendix K.

Table 5- 66: NRI Risk Index Values for Riverine Flooding in Iredell and Rowan Counties

NRI		Iredell	Rowan
EAL	Rating	Relatively Low	Relatively Low
	Value	$273,000	$334,000
	Frequency	0.8 Events Per Year	1.1 Events Per Year
Risk Index	Rating	Relatively Low	Relatively Low
	Score	40	79.2

Table 5- 67: NRI riverine flooding jurisdictional data based on census tracts in each planning area

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$23,801.59	39.94	Relatively Low	45.23	Relatively Moderate	0.8333
Harmony	$8,179.46	46.93	Relatively Moderate	39.08	Relatively Low	0.8333
Love Valley	$792.54	31.86	Relatively Low	38.96	Relatively Low	0.8333
Mooresville	$166,052.71	51.88	Relatively Moderate	53.32	Relatively Moderate	1.083
Statesville	$223,938.38	53.56	Relatively Moderate	50.21	Relatively Moderate	0.931
Troutman	$47,886.66	56.09	Relatively Moderate	52.66	Relatively Moderate	1.083
Rowan County *(Unincorporated Area)*	$19,295.05	59.58	Relatively Moderate	60.63	Relatively High	1.083
China Grove	$16,262.16	46.34	Relatively Moderate	39.65	Relatively Low	0.8333
Cleveland	$5,573.64	39.51	Relatively Low	50.22	Relatively Moderate	0.8333
East Spencer	$6,497.40	38.82	Relatively Low	44.68	Relatively Moderate	0.8333
Faith	$39,139.90	57.46	Relatively Moderate	56.34	Relatively Moderate	0.8333
Granite Quarry	$43,460.23	54.57	Relatively Moderate	55.19	Relatively Moderate	0.8333
Landis	$8,965.36	40.99	Relatively Moderate	37.63	Relatively Low	0.8333
Rockwell	$2,866.98	41.46	Relatively Moderate	45.72	Relatively Moderate	0.8333
Salisbury	$96,539.98	47.16	Relatively Moderate	46.92	Relatively Moderate	0.8333
Spencer	$23,357.66	43.90	Relatively Moderate	43.84	Relatively Moderate	0.8333

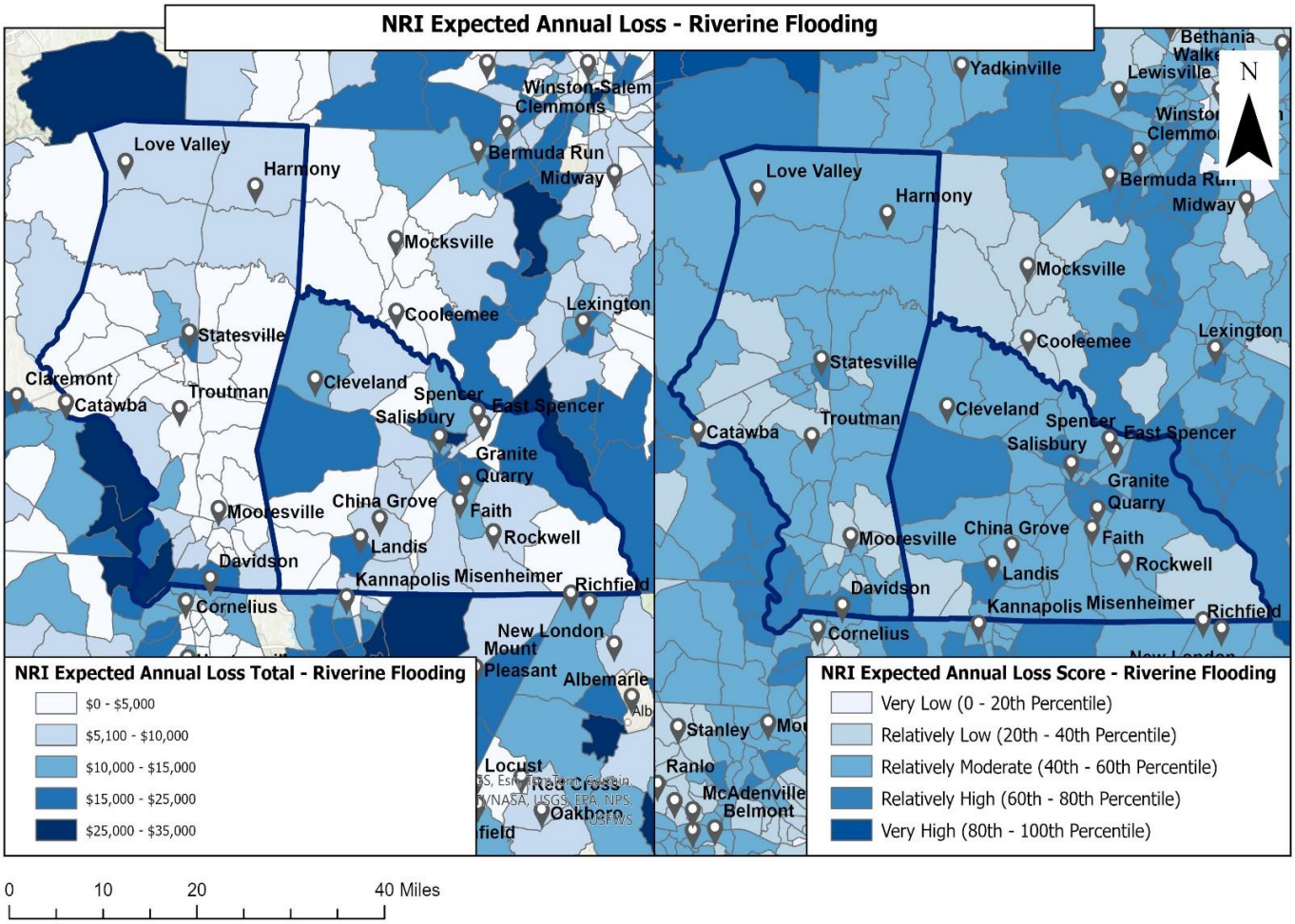


Figure 5- 98: NRI EAL Score and Total for Riverine Flooding in the planning area.

5.17.8. Flooding Hazard Vulnerability and Impact

The Region is vulnerable to the flood hazard. In order to quantify potential future flood hazard vulnerability, a similar detailed GIS analysis of the study area as completed for current flood vulnerability was performed using best available GIS data including the future Community 100-year Floodplain to identify the number and value of existing structures that may be located in future flood hazards areas as expanded due to anticipated “build-out” conditions (i.e., fully developed according to zoning and future land use projections). To quantify potentially at-risk properties, all buildings of at least 600 square feet (eliminating those that are likely accessory structures versus habitable buildings) that intersected with delineated future floodplain areas were identified. The exposure analysis does not include any estimates for new structures that will be constructed and located in the floodplain, as it is assumed that new construction will be protected against the 100-year flood according to local development regulations that include reference to future Community 100-year Floodplain maps. More information about the buildings, people, and high loss properties at risk of flood hazards see Appendix D.

During floods (especially flash floods), roads, bridges, farms, houses and automobiles can be adversely impacted. Additionally, the local government must deploy firemen, police and other emergency response personnel and equipment to help the affected area. It may take years for the affected communities to be re-built and business to return to normal. Certain health hazards are common to flood events. While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where farm animals are kept, or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E. coli and other disease-causing agents.

The second type of health problem arises after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and the elderly.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants. If the City water system loses pressure, a boil order may be issued to protect people and animals from contaminated water.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and personal belongings destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

For more information about the potential impacts of flooding to people, buildings, and high loss buildings in the planning area, please visit Appendix D.

5.17.9. Future Vulnerability: Impact Statements

People

Flooding has the potential to inflict damage on property, infrastructure, and critical facilities, along with causing possible severe injury or death for those impacted in the planning area. In addition, floodwater can create damage which directly or indirectly causes infiltration of sewer lines, creating a potential contamination of drinking water supplies and damaging utility lines. This creates a serious health hazard for vulnerable groups such as residents over the age of 65, 15.8% in Iredell County and 17.4% in Rowan County, and residents with disabilities, 11.7% in

Iredell and 16% in Rowan County. Iredell and Rowan County have experienced a 7.58% and 4.88% population increase between 2018 and 2023, respectively, and the planning area expects to continue to increase in population for the foreseeable future. This will require the planning area to consider expanding emergency response capabilities to address an increased population and future increases in flood risk throughout the planning area.

In Iredell and Rowan County, there are 3.2% and 6.5%, respectively, of residents that do not have access to a vehicle in their household, which would significantly increase the vulnerability of those residents in the event of emergency evacuation orders. Additionally, in Iredell County and Rowan County 12.8% and 10.7%of housing units, respectively, are RVs, Mobile Homes, Vans, or similar. These housing units are significantly more vulnerable to impacts from flooding damages.

Alerts to notify residents about flooding and related hazards can help prevent excessive impacts, but if residents do not have access to the internet, telephone service, or a computer, there may be a limited ability to prepare, respond, and be informed of impending flooding events. In Iredell County 9.4% of households and in Rowan County 14.7% of households report that they do not have access to the internet which is often used to relay vital information such as details of emergency alerts, information about emergency shelters, evacuation orders, and flooding preparedness. In addition, 6.5% of households in Iredell County and 10% in Rowan County report that they do not have access to a computer at all. Many emergency alerts are transmitted through text messages, and without adequate access to telephone service in a housing unit the ability to prepare for impending flooding events and contact emergency services for assistance will be significantly reduced. In Iredell County 0.9% of households and in Rowan County 0.8% of households report that they do not have telephone service in their housing unit.

As a result of these potential vulnerabilities, the planning area should consider the following actions to mitigate flooding impacts:

- Periodically evaluate emergency response capabilities in flood hazard areas to prepare for potential increases in population in flood hazard areas.
- Evaluate emergency response resources for vulnerable populations, those with limited transportation options, and residents with limited communication ability during flooding events.
- Seek financial support to assist low-income and vulnerable households to improve flood mitigation to housing units and flood mitigation measures.
- Upgrade utilities and drainage systems to prevent contamination of drinking water supplies and accommodate for increased runoff due to future development.
- Collaborate with non-profits and community organizations to reach underserved or vulnerable populations to provide education, information, and assistance with flooding preparedness.

Changes in Development or Housing Characteristics

Iredell County is expected to grow in population by 20% between 2020 and 2030, and they have increased the number of housing units by 13.72% between 2018 and 2023 which reflects the projected population growth of 20% highlighted by the 2045 Horizon Plan. Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. Rowan County is also expecting a conversion of 13,000 to 28,000 acres of farmland to primarily low residential development between 2016 and 2040 to accommodate the increase in growth and development. The increased development expected in the planning area creates the potential for increased flooding impacts as the amount of impervious surfaces increases. Impervious surfaces will create runoff, decrease infiltration, and will require improvements in stormwater infrastructure to prevent excessive flooding in areas of high-density development.

The planning area expects to increase housing units, population, and increase development. As a result, the planning area should consider the following mitigation actions to reduce the flooding vulnerability attributed to increased development:

- Incorporate a growth management strategy into future planning which integrates flooding mitigation strategies such as nature based flooding solutions, improving stormwater infrastructure, and decreasing the area of impervious surfaces within developments.
- Reduce the future vulnerability of new housing units by incentivizing flood resistant housing in areas of high concentrations of vulnerable housing units, such as in areas of premanufactured homes or RVs.

Economy

In Iredell County the top 5 industries are retail trade (16.01%), Manufacturing (11.53%), Accommodation and Food Services (10.46%), Healthcare and Social Assistance (9.14%), and Management of Companies and Enterprises (8.19%). In Rowan County the top 5 industries are Healthcare and Social Assistance (15.21%), Retail Trade (13.51%), Accommodation and Food Services (10.90%), Education Services (9.4%), and Transportation and Warehousing (8.65%). Many of these trades rely on tourism, transportation, and retail services, which may be significantly interrupted in the case that transportation is restricted into the area due to flooding impacts. Flooding can impact critical infrastructure, transportation infrastructure, this may result in significant loss of income for those who depend on these industries for employment. Tourism may also be significantly impacted by flooding impacts, which potentially includes impacts to retail trades, accommodations, and food service, which a large portion of the residents in the planning area rely on for employment.

Natural Environment

Extreme flooding events can impact any natural environment by altering habitats and ecosystems. Flooding events have the potential to damage hazardous material storage containers or structures, leading to the potential release of hazardous materials or chemicals into the natural environment. To reduce damages caused by flooding, the planning area should consider keeping an inventory of hazardous materials storage locations and reduce the storage of hazardous materials in flood prone areas. Additionally, the planning area should consider

reevaluation of the condition of storage containers in areas that have been impacted by flooding to ensure that there is no damage to the storage container.

First Responders

First Responders have a significant risk of severe or life-threatening injuries when responding to flooding related emergencies, such as water rescues or medical emergencies. Flooding may also significantly reduce the capabilities of emergency services to respond to emergencies during flood events due to blocked roads, damaged roads, damaged emergency response equipment, loss of power, and limited communication. The planning area should consider regularly reviewing emergency response procedures and updating responsibilities, reviewing areas at risk, and evaluating protocol for flooding event response, such as communications protocol, to address the potentially limited capabilities.

Continuity of Operations

Flooding has the potential to disrupt normal operations in the affected area by disrupting utilities, reducing the ability to travel, damaging critical infrastructure, damaging critical facilities, and limiting the ability to communicate. To limit the disruption to continuity of operations, the planning area should regularly review and improve response capabilities to shorten recovery and prevent excessive damages during flooding events.

Climate Change

In the future, warmer temperatures and changes in frequency of heavy precipitation due to climate change are likely to increase the impacts and frequency of river flooding. The Climate Science Special Report (CSSR), Fourth National Climate Assessment, stated with high confidence that the frequency and intensity of heavy precipitation events are projected to continue to increase over the 21st century. The increased likelihood of extreme precipitation events due to climate change will result in greater risks of flash flooding and impacts from stormwater runoff throughout the State of North Carolina. While there may be less precipitation overall, in the long term the rainfall that does occur will likely be during more intense events that may result in increasing number of inland flooding incidents.

Inland flooding depends not only on extreme precipitation but also on characteristics of the land surface, including land use and development, land cover, and soil moisture conditions. It also depends on whether deliberate adaptive measures are implemented proactively. While it is likely that the frequency and severity of inland flooding will increase because of increases in the frequency and intensity of extreme precipitation, the uncertainty associated with these additional factors tends to lower the level of certainty with which more detailed predictions can be made.

Other Hazards

5.18.Hazardous Materials Incidents

5.18.1. Background

Hazardous materials can be found in many forms and quantities that can potentially cause death; serious injury; long-lasting health effects; and damage to buildings, homes, and other property in varying degrees. Such materials are routinely used and stored in many homes and businesses and are also shipped daily on the nation's highways, railroads, waterways, and

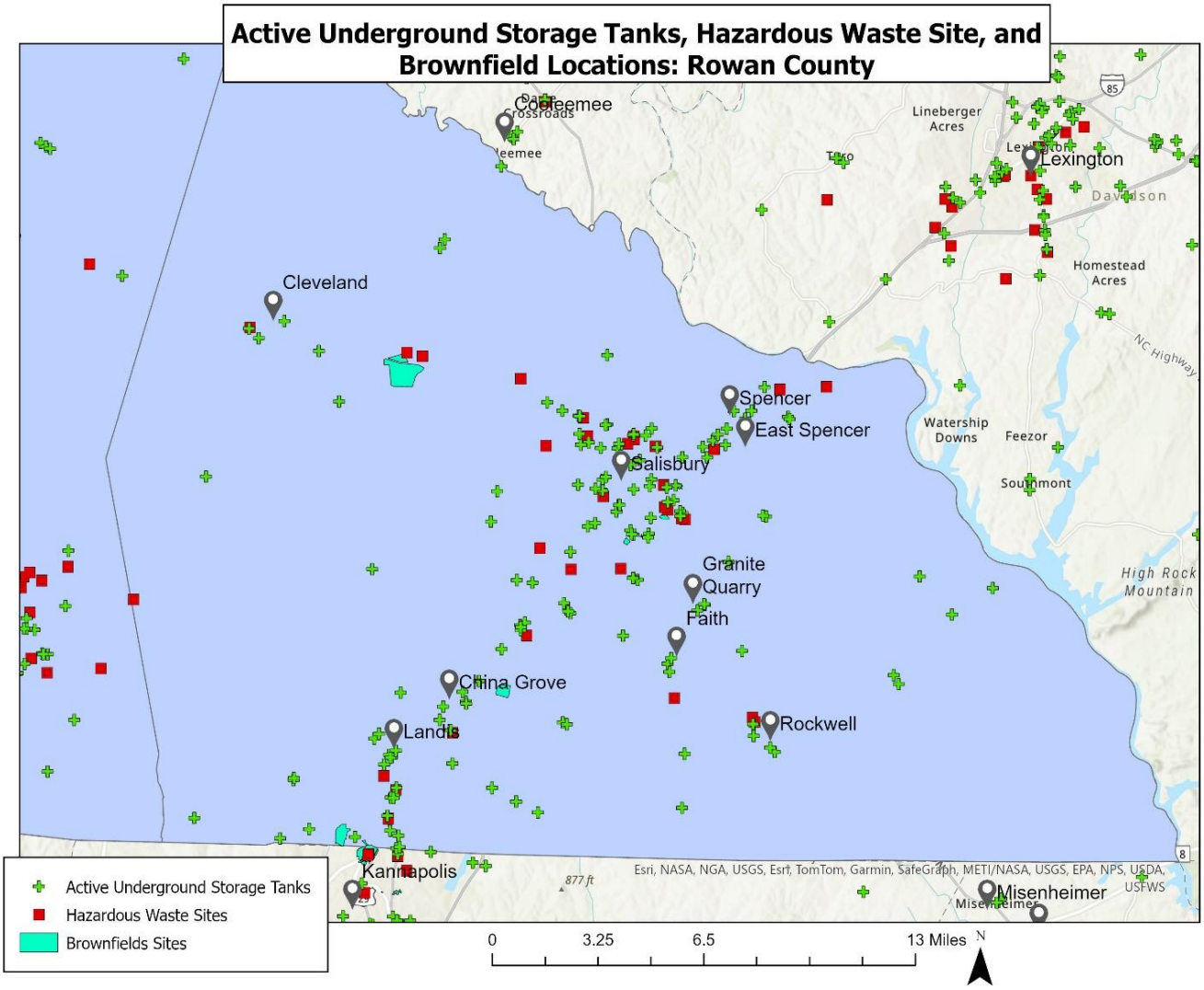


Figure 5- 99: Underground storage tanks, hazardous waste sites, and Brownfields location

pipelines. This subsection on the hazardous material hazard is intended to provide a general overview of the hazard, and the threshold for identifying fixed and mobile sources of hazardous materials is limited to general information on rail, highway, and FEMA-identified fixed HAZMAT sites determined to be of greatest significance as appropriate for the purposes of this plan.

Hazardous material (HAZMAT) incidents can apply to fixed facilities as well as mobile, transportation- related accidents in the air, by rail, on the nation's highways, and on the water. There have been 832 reported hazmat incidents between 2016 and 2024 in North Carolina, with

a total of $1,357,141 of damages and 3 non-hospitalized injuries[64]. In essence, HAZMAT incidents consist of solid, liquid, and/or gaseous contaminants that are released from fixed or mobile containers, whether by accident or by design as with an intentional terrorist attack. A HAZMAT incident can last hours to days, while some chemicals can be corrosive or otherwise damaging over longer periods of time. In addition to the primary release, explosions and/or fires can result from a release, and contaminants can be extended beyond the initial area by persons, vehicles, water, wind, and possibly wildlife as well.

Release of hazardous materials can create long term environmental health and environmental justice issues for communities that are impacted. As some sites may become contaminated and require extensive remediation processes, environmental monitoring, and land use restrictions that will impact the surrounding environment and communities. Contamination may also complicate recovery from natural disasters by causing the release, spread, or further contamination of hazardous materials. This includes properties such as Brownfields Properties, which are sites where the potential presence of a hazardous substance or contaminant complicate the cleanup and use of a property.

[64] U.S. Department of Transportation: Pipeline and Hazardous Materials Safety Administration. (2025). Hazmat Summary by Incident State [Dataset]. In Hazmat Intelligence Portal. https://portal.phmsa.dot.gov/analytics/saw.dll?PortalPages

Natural disasters can create potential for hazardous materials spills and contamination by damaging storage containers or impacting previously contaminated sites. It is important to determine where previous contamination has occurred, where hazardous materials are currently stored, and where contamination may be worsened by natural disasters. In the case of Hurricane Floyd in September 1999, communities along the Eastern United States were faced with flooded junkyards, disturbed cemeteries, deceased livestock, floating propane tanks, uncontrolled fertilizer spills, and a variety of other environmental pollutants that caused widespread toxicological concern.

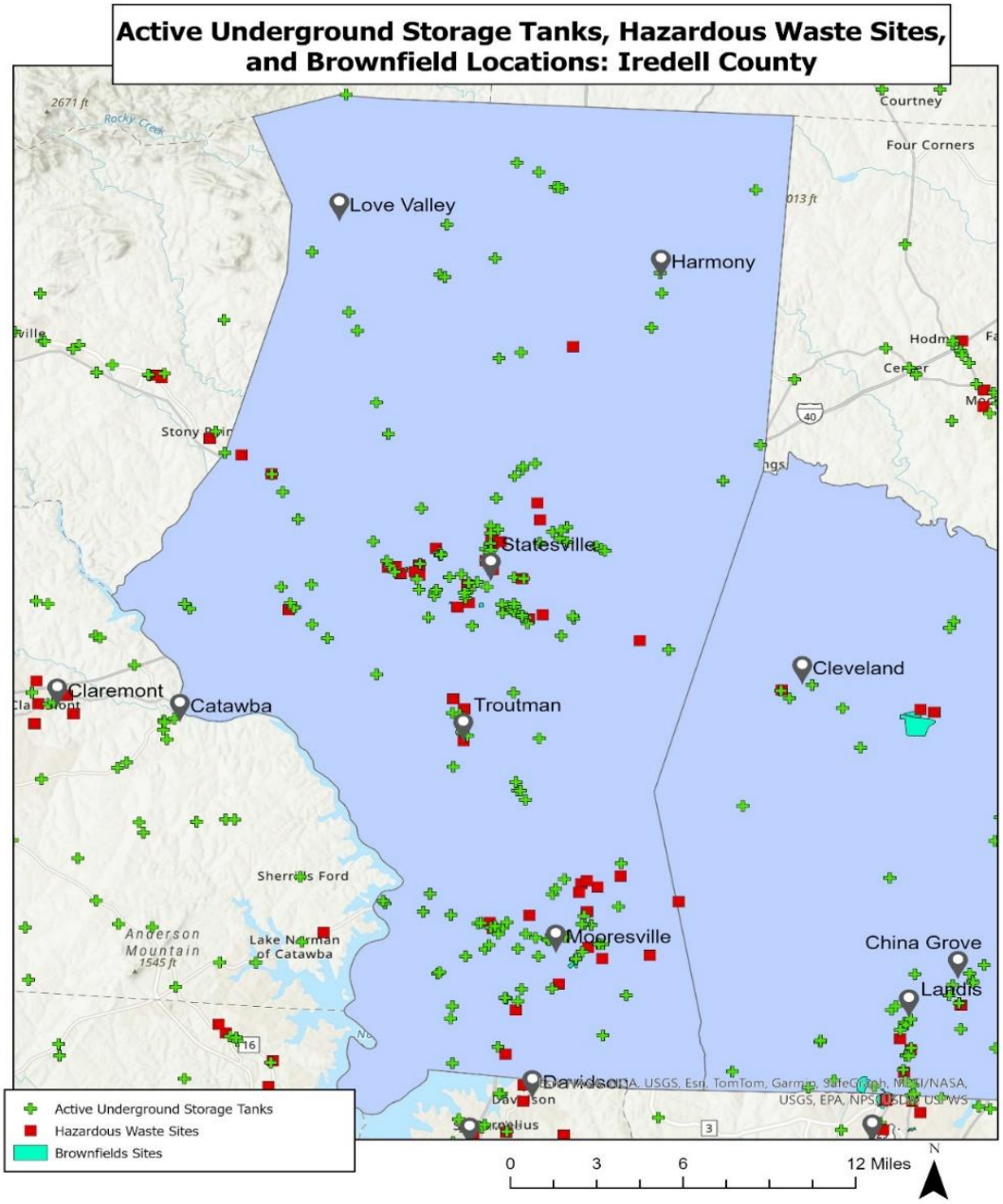


Figure 5- 100: Underground storage tanks, hazardous waste sites, and Brownfields location

Hazardous material incidents can include the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous material, but exclude: (1) any release which results in exposure to poisons solely within the workplace with respect to claims which such persons may assert against the employer of such persons; (2) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel or pipeline pumping station engine; (3) release of source, byproduct, or special nuclear material from a nuclear incident; and (4) the normal application of fertilizer.

The results of hazardous materials incidents can cause long lasting environmental issues, such as soil toxicity, environmental hazards, community health impacts, and environmental damage which may extensively damage the surrounding ecosystems. Therefore, it is important for communities to understand HAZMAT incidents, areas of HAZMAT contamination, and areas where HAZMAT incidents may occur. This includes remediation sites, such as Brownfields Sites.

5.18.2. Location

The following maps in Figure 5- 101 and Figure 5- 102 represent the locations of Underground Storage Tanks (UST), Above Ground Storage Tank (AST), Hazardous Waste Sites, and Inactive

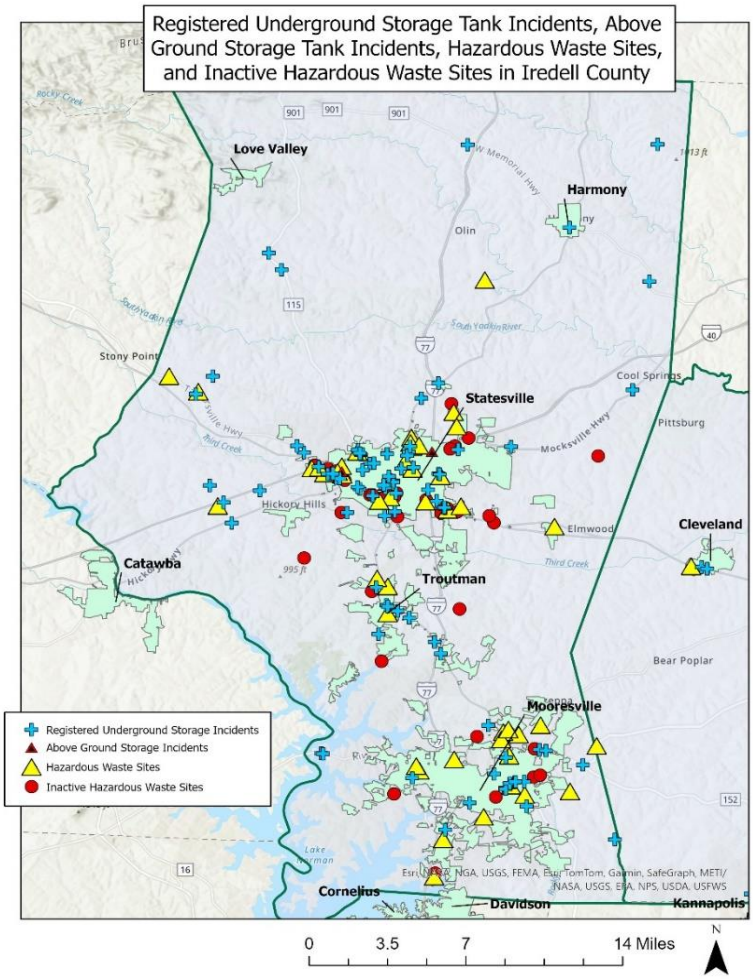


Figure 5- 101: Locations of UST, AST, Hazardous Waste Sites, and Inactive Hazardous Waste in Iredell County

hazardous waste sites in the planning area. Sources of the data in Figure 5- 101 and Figure 5- 102 are listed in Table 5- 68.

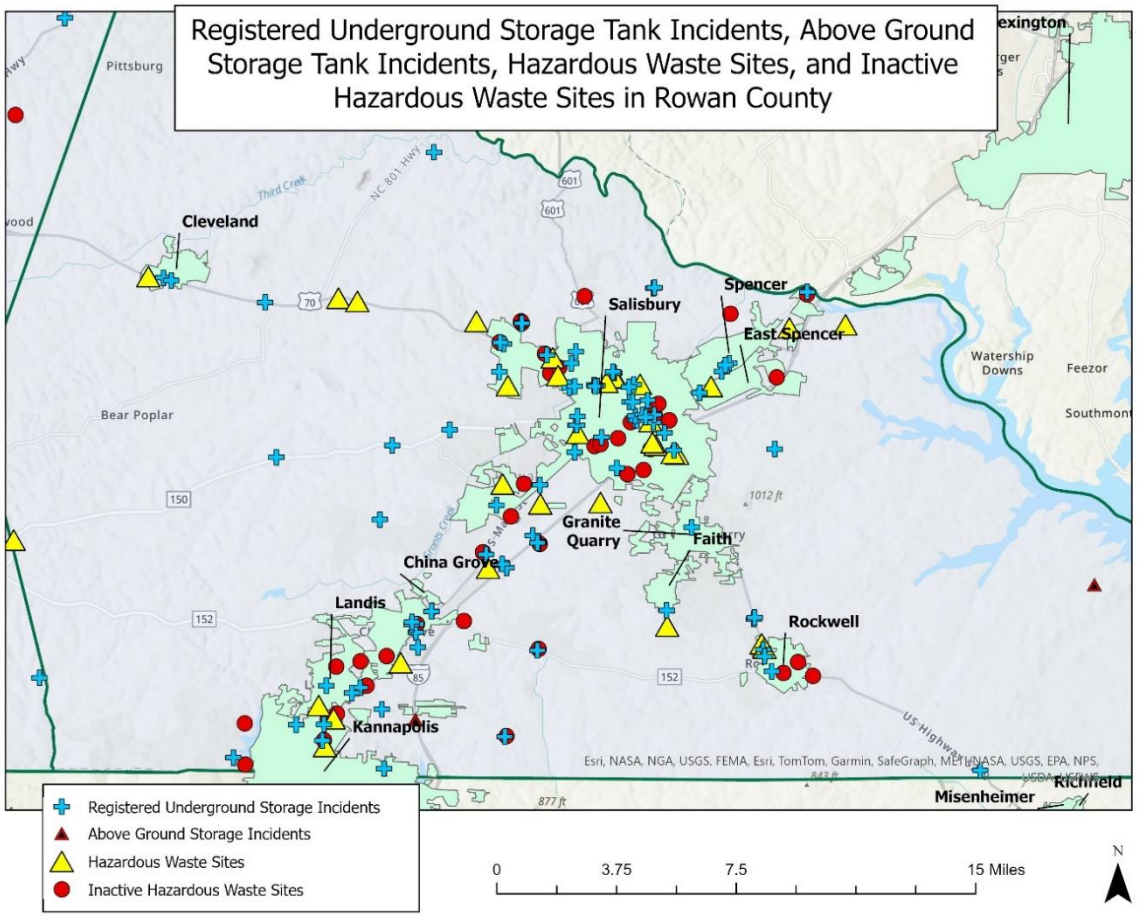


Figure 5- 102: UST Incidents, AST Incidents, Hazardous Waste Sites, and Inactive Hazardous Waste Sites in Rowan County

5.18.3. Extent

As a result of the 1986 Emergency Planning and Community Right to Know Act (EPCRA), the EPA provides public information on hazardous materials. One facet of this program is to collect information from industrial facilities on the releases and transfers of certain toxic agents. The Iredell Rowan region these sites are shown in Figure 5- 100 and Figure 5- 99. The Iredell Rowan region These sites are shown in Figure 5- 100 and Figure 5- 99.

In addition to “fixed” hazardous materials locations, hazardous materials may also impact the region via roadways and rail. Many roads in the region are narrow and winding, making hazardous material transport in the area especially treacherous. All roads that permit hazardous material transport are considered potentially at risk to an incident.

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) regulates gas distribution incidents, hazardous liquid accidents, gas transmission and gathering incidents, and liquefied natural gas incidents[65]. The NCDEQ regulates Underground Storage Tanks (UST) and reporting requirements associated with incidents. NCDEQ requires any Above Ground Storage (AST) incidents— such as release, leak discharge, or spill of regulated or hazardous substances—follow the same processes as a UST cleanup and reporting guidelines. The main difference between USTs and ASTs is that reporting and monitoring thresholds are different. While USTs require leak detection and monitoring systems, ASTs do not require leak detection or monitoring systems unless they store oil or other hazardous materials but have more specific fire and safety regulations due to the flammability of materials stored.

Table 5- 68: Definitions for hazardous materials incidents

Type	Reporting Agency	Criteria
Gas Distribution Incident	PHMSA	According to 49 CFR 191.3[66] an incident is: 1. An event that involves the release of gas from a pipeline, gas from an underground natural gas storage facility, liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from a liquefied natural gas facility results in one or more of the following a. A death or personal injury resulting in an in-patient hospitalization b. Property damage estimates of $122,000 or more including loss to the operators, others, or both, but excluding the cost of lost gas. For adjustments for inflation 2021 and onward, changes to the reporting threshold will be updated. c. Unintentional estimated gas loss of three million cubic feet or more 2. An event that results in an emergency shutdown of a liquified natural gas facility or an underground natural gas storage facility. Activation of an emergency shutdown system for reasons other than an actual emergency within the facility does not constitute an incident 3. An event that is significant in the judgement of the operator, the person who engages in the transportation of the gas, even if it does not meet the other requirements to qualify as an incident
Hazardous Liquid Accident		
Gas Transmission and Gathering Incident		
Liquified Natural Gas Incident		
Regional UST incident	NC DEQ	Incidents are release, spill, or discharge of a regulated substance. Reporting is required for incidents that include the discovery of regulated substances that have been observed by the implementing

[65] U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. (2025). Gas Distribution Incident Data [Dataset]. In Distribution, Transmission & Gathering, LNG, and Liquid Accident and Incident Data. U.S. Department of Transportation. https://www.phmsa.dot.gov/data-and-statistics/pipeline/distribution-transmission-gathering-lng-and-liquid-accident-and-incident-data

[66] Transportation of Natural and Other Gas by Pipeline; Annual, Incident, and Other Reporting, 49 CFR § 191, (2021). https://www.ecfr.gov/current/title-49/part-191

Type	Reporting Agency	Criteria
		agency or by another party. The NCDEQ follows NCGS 143-215.75 and NCGS Article 21 143-215.1-6 to regulated USTs[67]. These follow regulations outlined by the 49 CFR § 191 which outlines regulations for USTs.
Regional AST incident		Incidents are release, spill, or discharge of a regulated substance. Release is required to be reported to the NCDEQ UST section regional office for all discovered AST incidents of regulated or hazardous substances and follows all regulations that apply to UST incident reporting.

5.18.4. Historical Occurrences

Table 5- 69: Incidents in Iredell County and Rowan County from 2010-2024

Reporting Agency	Category	Iredell County	Rowan County
NC DEQ	AST Incidents[68]	73	70
	UST Incidents[69]	112	120
	Hazardous Waste Sites[70]	46	31
	Inactive Hazardous Waste Sites[71]	38	40
	Brownfield Sites[72]	10	12
PHMSA[73]	Gas Distribution Incident	0	0
	Hazardous Liquid Accident		
	Gas Transmission and Gathering Incident		

[67] N.C. Department of Environmental Quality. (n.d.). Underground Storage Tanks Rules. NCDEQ. Retrieved January 6, 2025, from https://www.deq.nc.gov/about/divisions/waste-management/underground-storage-tanks-section/underground-storage-tanks-rules
[68] N.C. Department of Environmental Quality [NCDEQ]. (2025). AST incidents [Dataset]. In NCDEQ Online GIS. NCDEQ. https://data-ncdenr.opendata.arcgis.com/datasets/79aa8ce8bb344a698fc47d74255b9898_0/explore?location=5.769421%2C-32.569019%2C3.88
[69] N.C. Department of Environmental Quality. (2025). UST Incidents [Dataset]. In NCDEQ Online GIS. https://data-ncdenr.opendata.arcgis.com/datasets/aa93c706ed974ceda58f060ed8181390_0/explore?location=0.001161%2C-79.894000%2C0.00
[70] N.C. Department of Environmental Quality [NCDEQ]. (2024). Hazardous Waste Sites [Dataset]. In NCDEQ Online GIS. NCDEQ. https://data-ncdenr.opendata.arcgis.com/search?tags=Restoration
[71] N.C. Department of Environmental Quality [NCDEQ]. (2024b, October 1). Inactive hazardous sites. NCDEQ Online GIS. Retrieved January 6, 2025, from https://data-ncdenr.opendata.arcgis.com/datasets/4036f19fe1f145f39189108060284ee4_0/explore?location=35.650912%2C-80.665424%2C11.14
[72] N.C. Department of Environmental Quality [NCDEQ]. (2024c). NC Brownfields Boundary View [Dataset]. In NCDEQ Online GIS. NCDEQ. https://data-ncdenr.opendata.arcgis.com/datasets/cb87c400320f4d0480f749934b114572_0/explore
[73] U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration. (2025). Gas Distribution Incident Data [Dataset]. In Distribution, Transmission & Gathering, LNG, and Liquid Accident and Incident Data. U.S. Department of Transportation. https://www.phmsa.dot.gov/data-and-statistics/pipeline/distribution-transmission-gathering-lng-and-liquid-accident-and-incident-data

Reporting Agency	Category	Iredell County	Rowan County
	Liquified Natural Gas Incident		

According to the U.S. Department of Transportation: Pipeline and Hazardous Materials safety administration, there has been no pipeline and hazmat incidents in Iredell County or Rowan County since 2010.

5.18.5. Probability of Future Occurrence

Given the 46 hazardous waste sites in Iredell County and 31 hazardous waste sites in Rowan County, along with other HAZMAT sites and incidents summarized in Table 5- 69, county and municipal officials are mindful of the possibility and take precautions to prevent such an event from occurring. There are currently no detailed measures of probability to predict hazardous materials incidents occurring in the planning area.

5.18.6. Hazardous Materials Incident Vulnerability and Impact

Hazardous materials incidents can cause vulnerability to the community by introducing hazardous substances into the environment. The following are potential impacts on the community that hazardous materials incidents may have.

5.18.7. Future Vulnerability: Problem Statements

People

The potential introduction of hazardous materials into the planning area could pose threats to the health of the community including contamination of soil, water, and air, leading to numerous health concerns. Because different hazardous materials have different impacts on human health, it is difficult to understand the potential impact on the residents of the planning area.

Changes in Development or Housing

There are no changes in development or housing expected to increase the vulnerability of the planning area to hazardous materials.

Economy

There are no changes in hazardous materials vulnerability expected due to changes of the economy in the planning area.

Natural Environment

There are no changes in the natural environment that would increase the vulnerability of the planning area to hazardous materials and there are no changes to hazardous materials incidents that would increase the vulnerability of the natural environment.

First Responders

There are no changes in vulnerability to first responders expected due to hazardous materials incidents.

Continuity of operations

Hazardous materials incidents could interrupt the planning area by disrupting day to day operations and continuity of operations related to cleanup, remediation, and hazardous materials presence in the planning area.

Climate Change

There are no changes in hazardous materials incident risk due to climate change.

5.19. Wildfire

5.19.1. Background

A wildfire is any outdoor fire (i.e. grassland, forest, brush land) that is not under control, supervised, or prescribed[74]. Wildfires are part of the natural management of forest ecosystems but may also be caused by human factors.

Nationally, over 80 percent of forest fires are started by negligent human behavior such as smoking in wooded areas or improperly extinguishing campfires. The second most common cause for wildfire is lightning. In North Carolina, most fires are caused by debris burning.

There are three classes of wildland fires: surface fire, ground fire, and crown fire. A surface fire is the most common of these three classes and burns along the floor of a forest, moving slowly and killing or damaging trees. A ground fire (muck fire) is usually started by lightning or human carelessness and burns on or below the forest floor. Crown fires spread rapidly by wind and move quickly by jumping along the tops of trees. Wildfires are usually signaled by dense smoke that fills the area for miles around.

Wildfire probability depends on local weather conditions, outdoor activities such as camping, debris burning, and construction, and the degree of public cooperation with fire prevention measures. Drought conditions and other natural hazards (such as tornadoes, hurricanes, etc.) increase the probability of wildfires by producing fuel in both urban and rural settings.

Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within high wildfire hazard areas. Furthermore, the increasing demand for outdoor recreation places more people in wildlands during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

Wildfires can result in severe economic losses as well. Businesses that depend on timber, such as paper mills and lumber companies, experience losses that are often passed along to consumers through higher prices and sometimes jobs are lost. The high cost of responding to and recovering from wildfires can deplete state resources and increase insurance rates. The

[74] Prescription burning, or “controlled burn,” undertaken by land management agencies is the process of igniting fires under selected conditions, in accordance with strict parameters.

economic impact of wildfires can also be felt in the tourism industry if roads and tourist attractions are closed due to health and safety concerns.

State and local governments can impose fire safety regulations on home sites and developments to help curb wildfire. Land treatment measures such as fire access roads, water storage, helipads, safety zones, buffers, firebreaks, fuel breaks, and fuel management can be designed as part of an overall fire defense system to aid in fire control. Fuel management, prescribed burning, and cooperative land management planning can also be encouraged to reduce fire hazards.

5.19.2. Location and Spatial Extent

The entire region is at risk from a wildfire occurrence. However, several factors such as drought conditions or high levels of fuel on the forest floor may make a wildfire more likely. Conversely, areas of high development limit wildfire risk. It is also important to note that areas in the urban-wildland interface (where development abuts forest or open land) are particularly susceptible to wildfire hazard. When large wildfires burn on these open lands, it can be difficult to stop its spread to the built environment, thus endangering structures and population. The urban, more developed areas in the Iredell Rowan Region, including Statesville, Mooresville, and Salisbury, and the surrounding areas are prime examples of this. The Fire Occurrence Areas in the figure below give an indication of historic locations impacted.

To identify specific potential wildfire hazard areas within the planning area, a GIS-based data layer called the Wildland Fire Susceptibility Index (WFSI) was obtained from the North Carolina Division of Forest Resources (NCDFR). The WFSI is a component layer derived from the Southern Wildfire Risk Assessment Portal (SWRAP), a multi-year project to assess and quantify wildfire risk for the 13 Southern states. The WFSI is a value between 0 and 1. It was developed consistent with the mathematical calculation process for determining the probability of an acre burning. The WFSI integrates the probability of an acre igniting and the expected final fire size based on the rate of spread in four weather percentile categories into a single measure of wildland fire susceptibility. Due to some necessary assumptions, mainly fuel homogeneity, it is not the true probability. But since all areas of the planning area have this value determined consistently, it allows for comparison and ordination of areas as to the likelihood of an acre burning.

Areas with a Fire Intensity Scale (FIS), or Characteristic Fire Intensity Scale (CFIS), value of 3 were at moderate risk (yellow) to the wildfire hazard. Areas with a value greater than 4 were at high (red) risk to the wildfire hazard. Areas with a value less than 2 were considered to not be at low (green) or no risk to the wildfire hazard.

Data was collected from the SWRAP and the FIS layer was used to develop the maps used to show risk. The Fire Intensity Scale is based on the severity a wildfire would be if it occurred but does not provide a measure of susceptibility. See Section 5.19.3. for more information about fire hazard scales from the SWRAP.

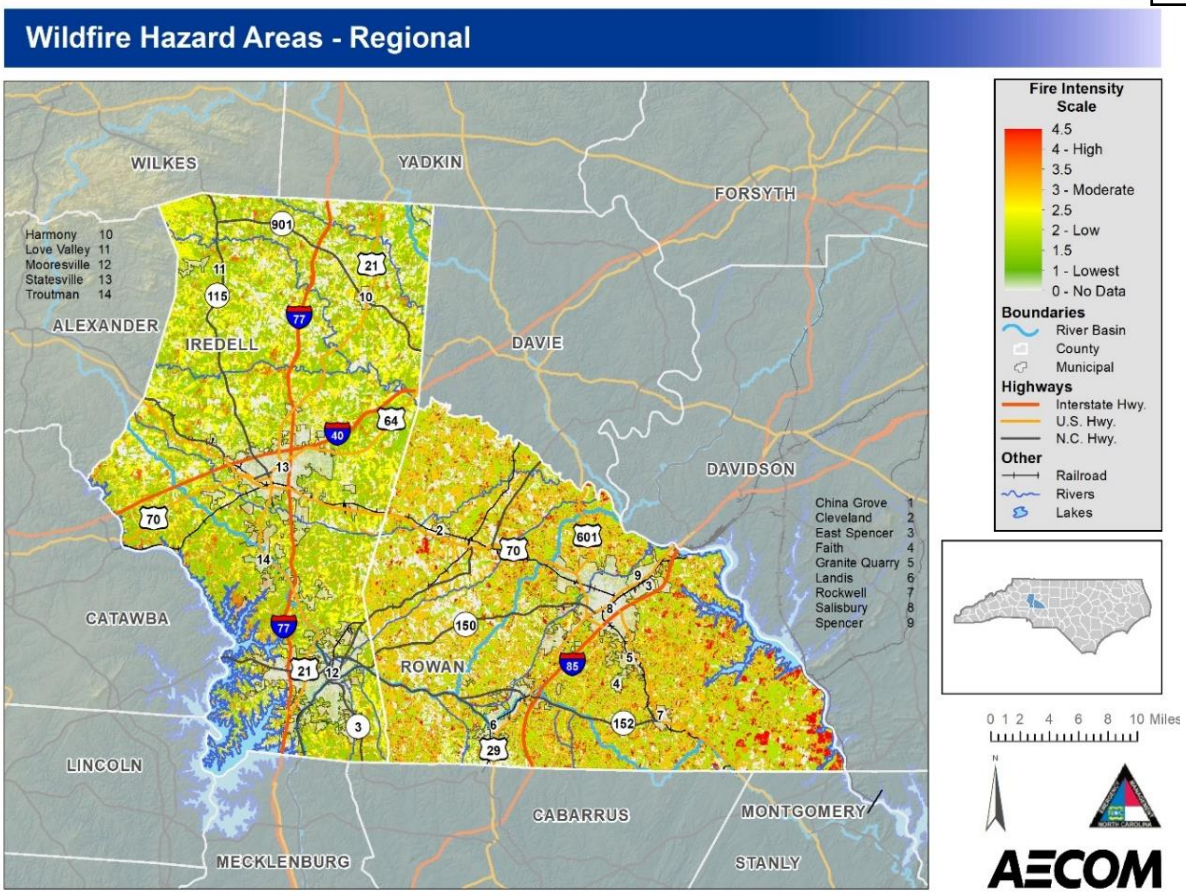


Figure 5- 103: Wildfire hazard areas in the planning area

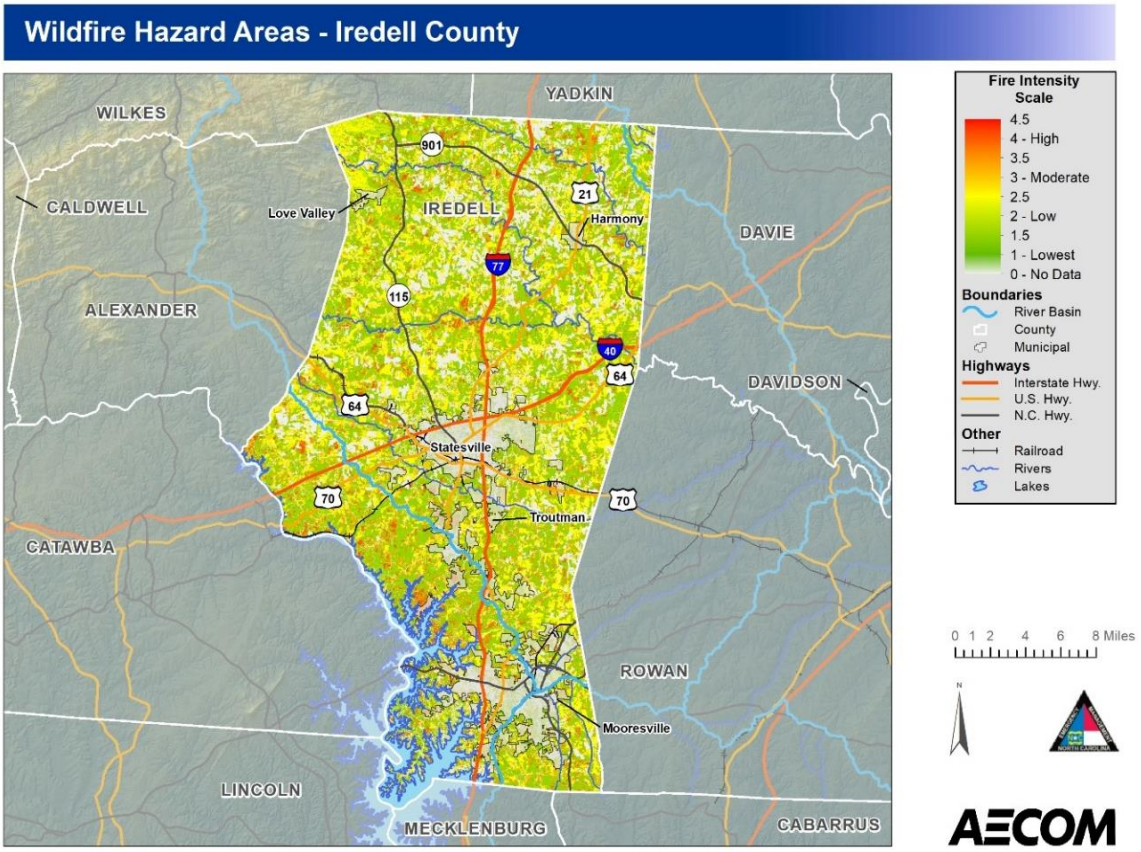


Figure 5- 104: Wildfire hazard areas in Iredell County

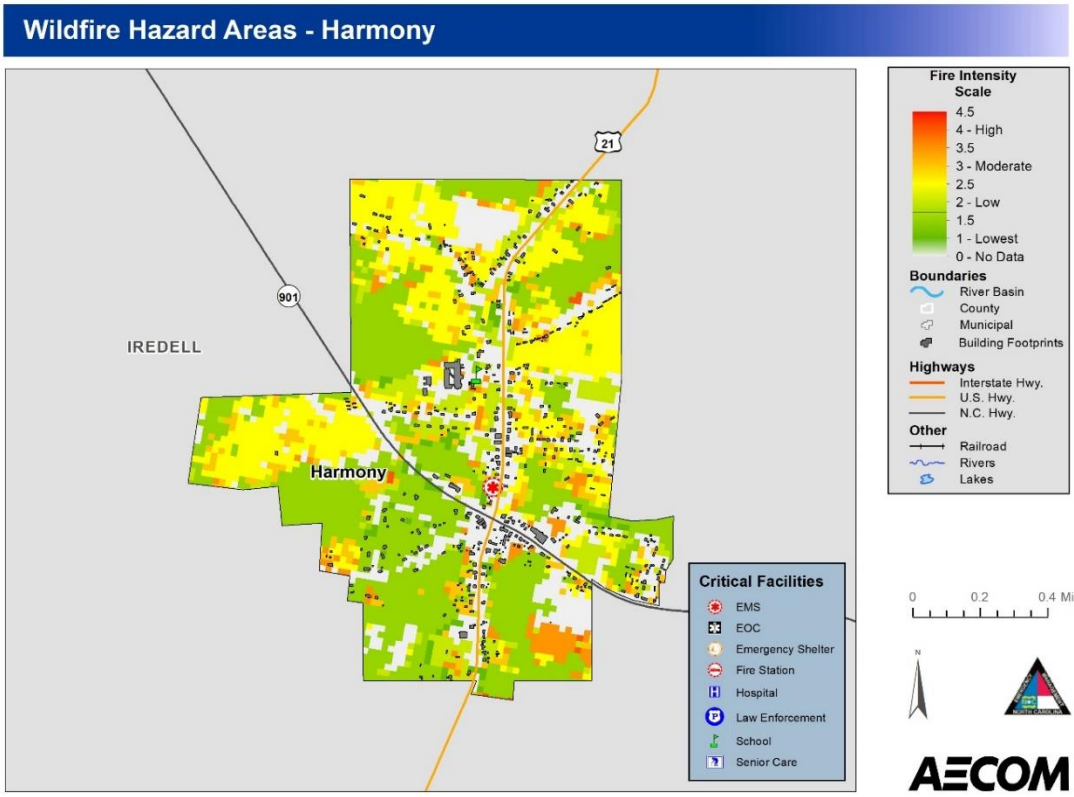


Figure 5- 105: Wildfire hazard areas in Harmony

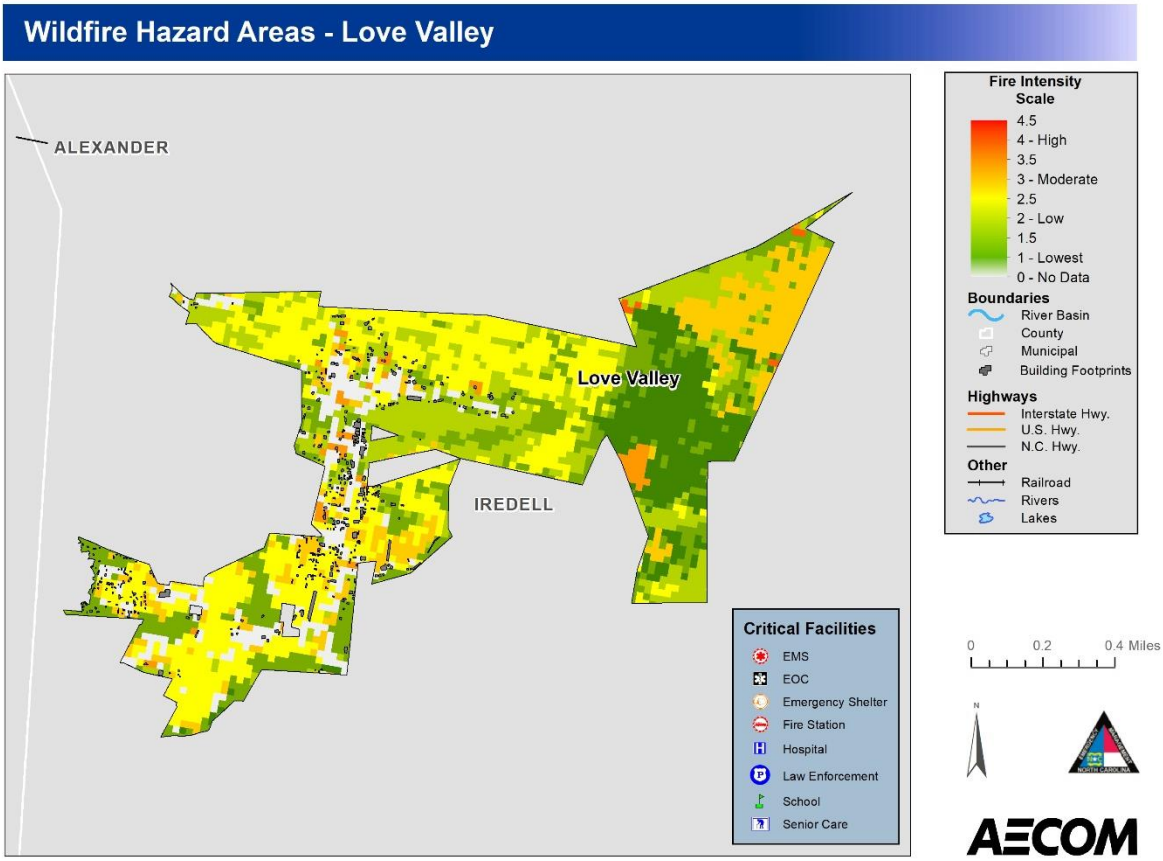


Figure 5- 106: Wildfire hazard areas in Love Valley

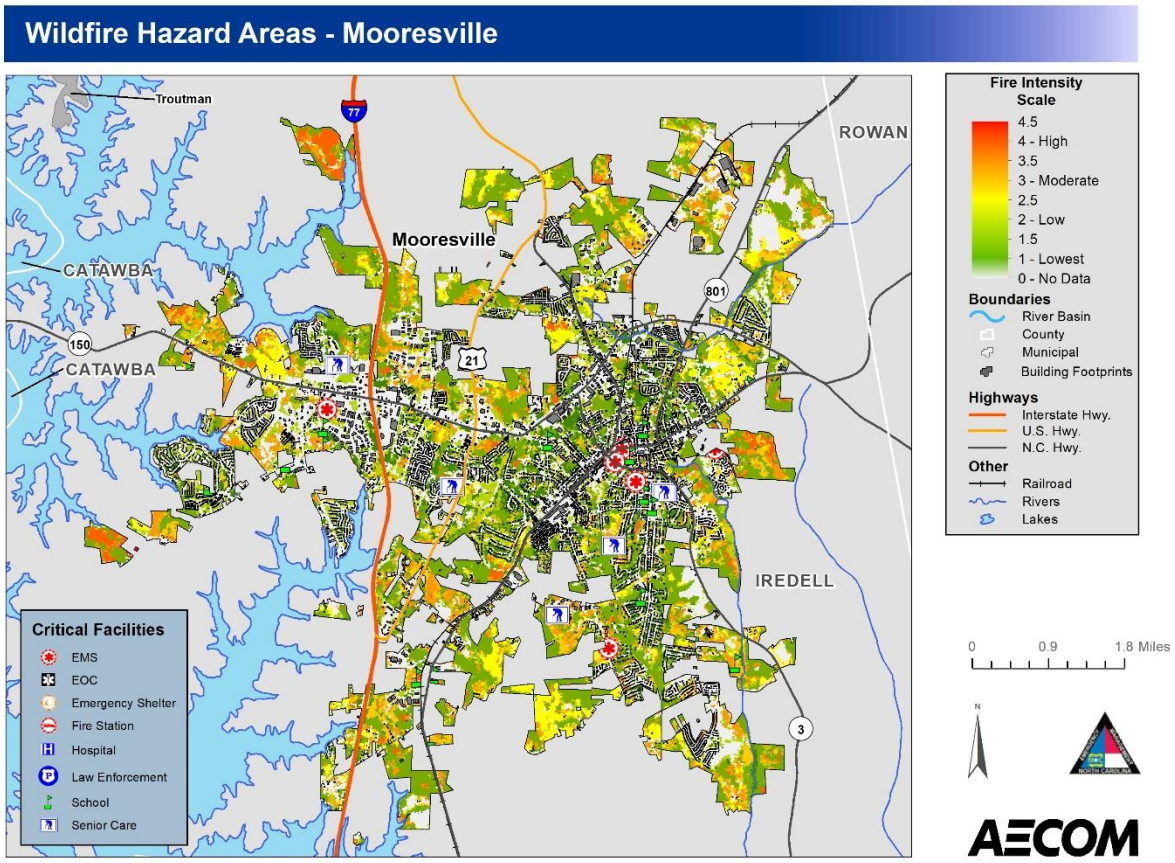


Figure 5- 108: Wildfire hazard areas in Mooresville

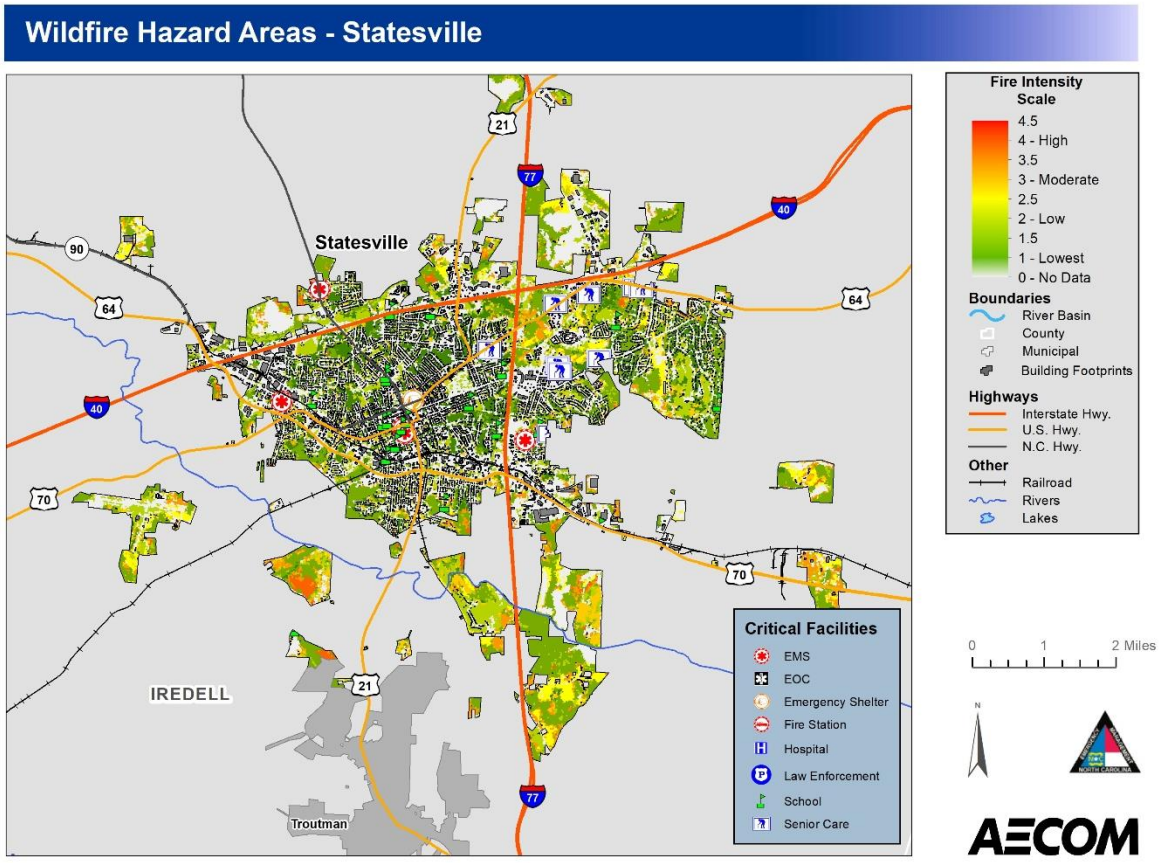


Figure 5- 107: Wildfire hazard areas in Statesville

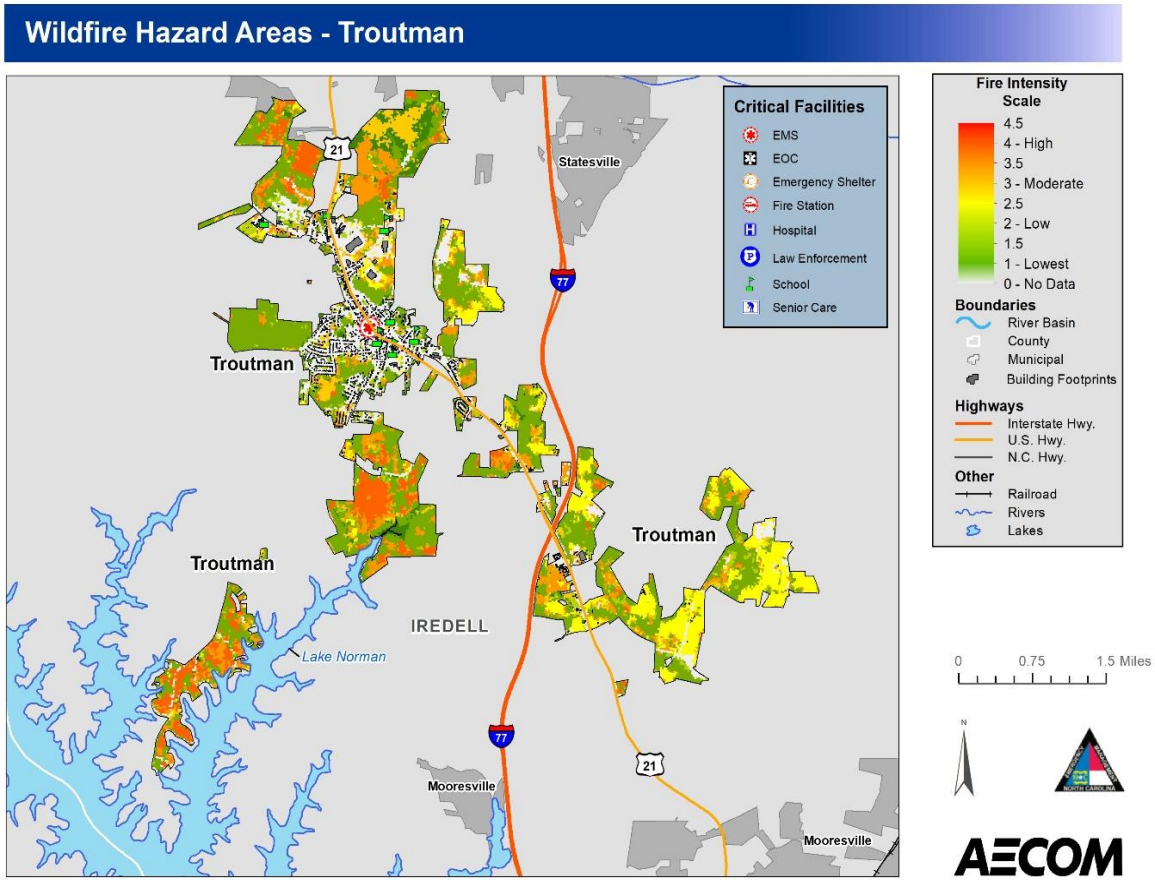


Figure 5- 110: Wildfire hazard areas in Troutman

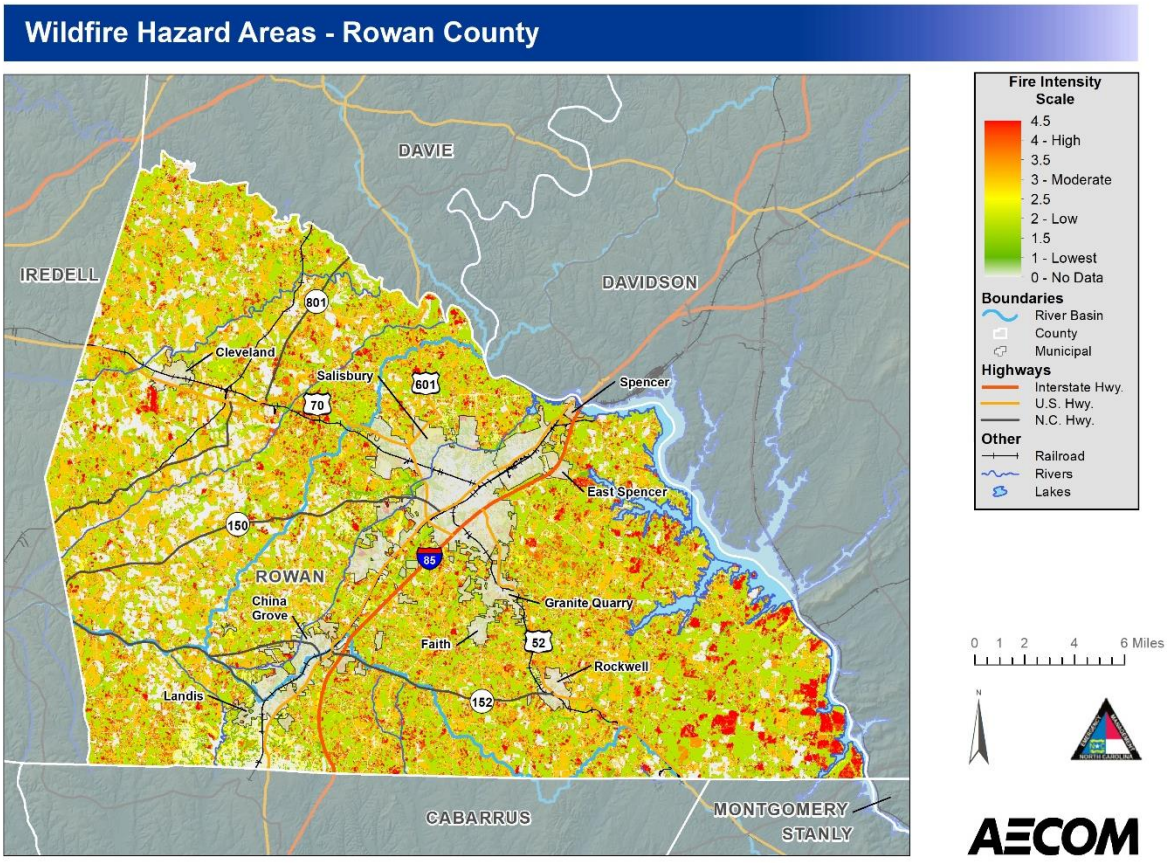


Figure 5- 109: Wildfire hazard areas in Rowan County

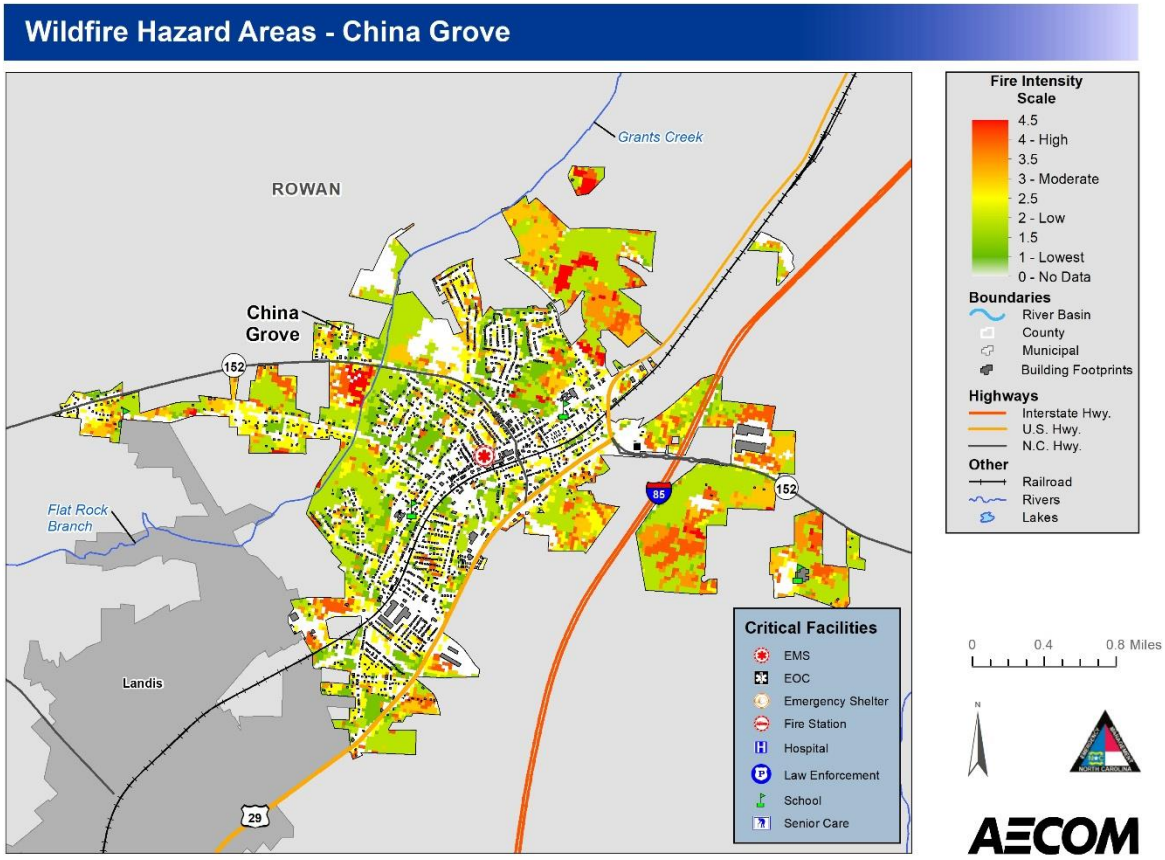


Figure 5- 112: Wildfire hazard areas in China Grove

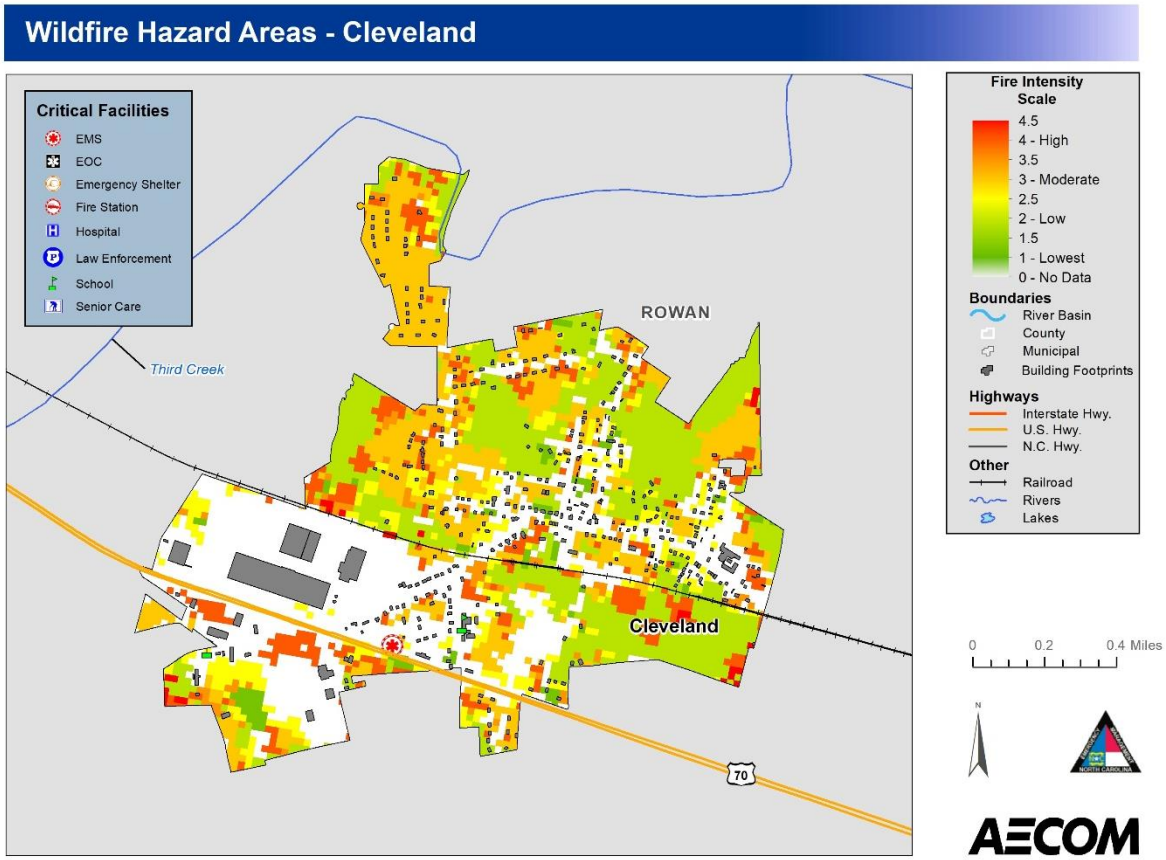


Figure 5- 111: Wildfire hazard areas in Cleveland

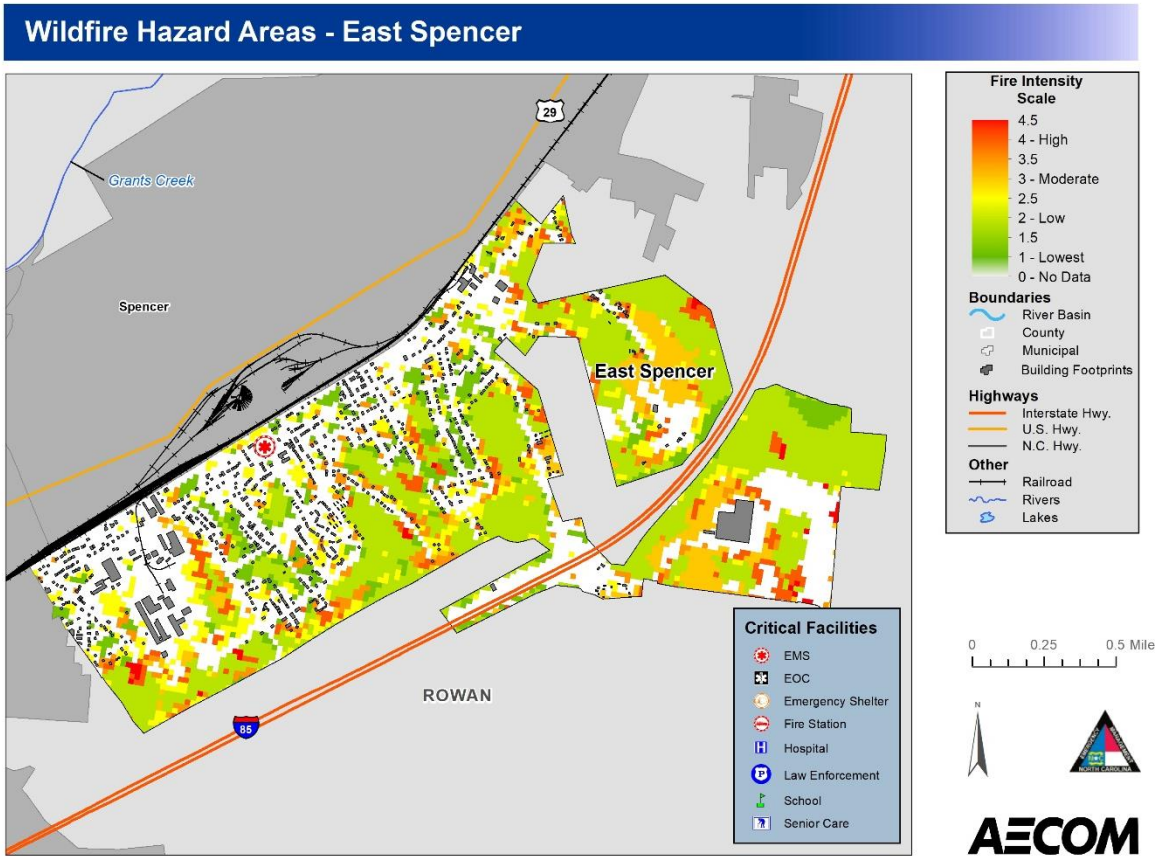


Figure 5- 113: Wildfire hazard areas in East Spencer

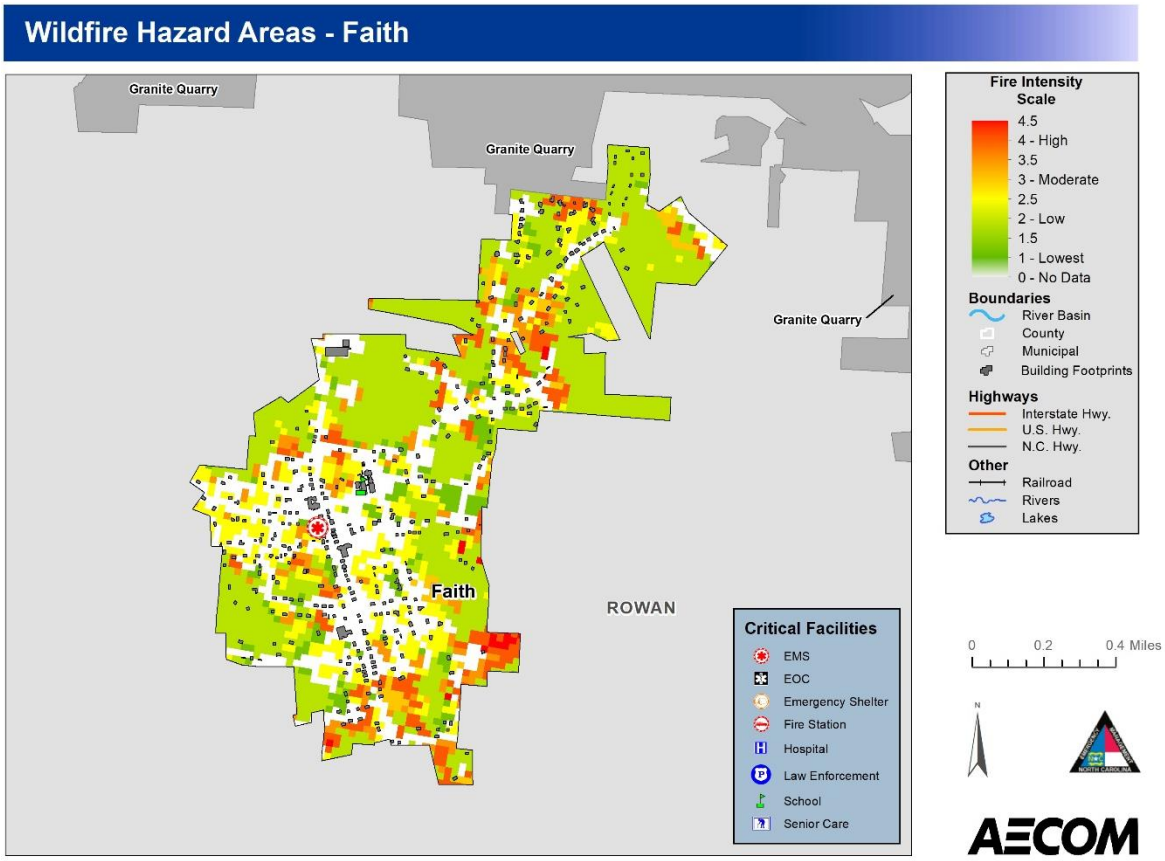


Figure 5- 115: Wildfire hazard areas in Faith

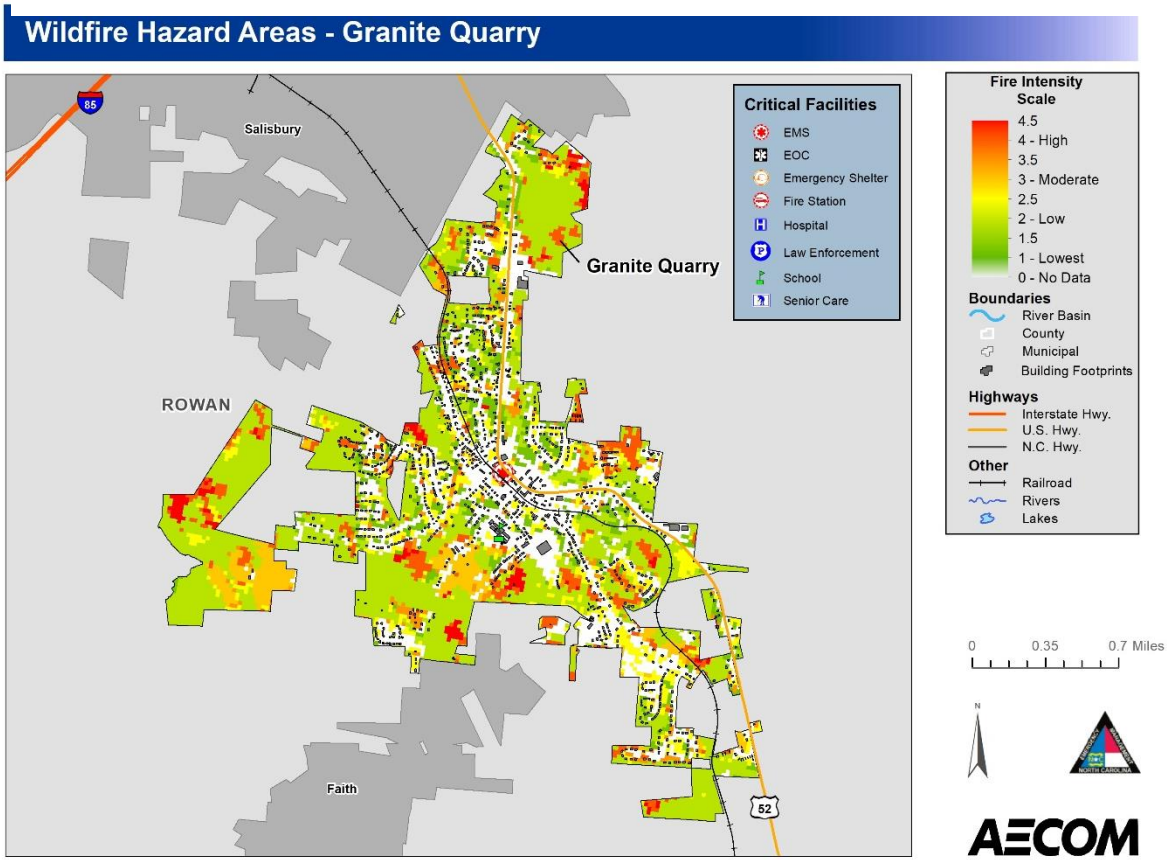


Figure 5- 114: Wildfire hazard areas in Granite Quarry

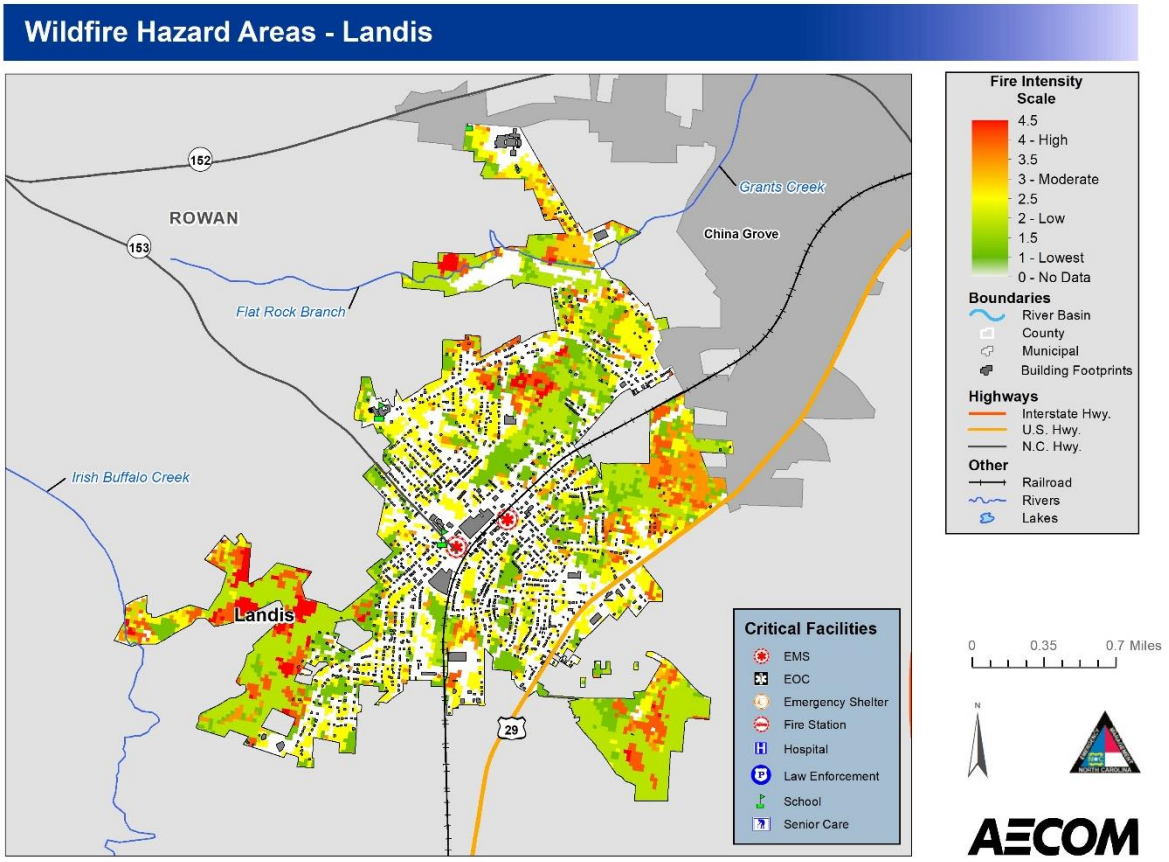


Figure 5- 117: Wildfire hazard areas in Landis

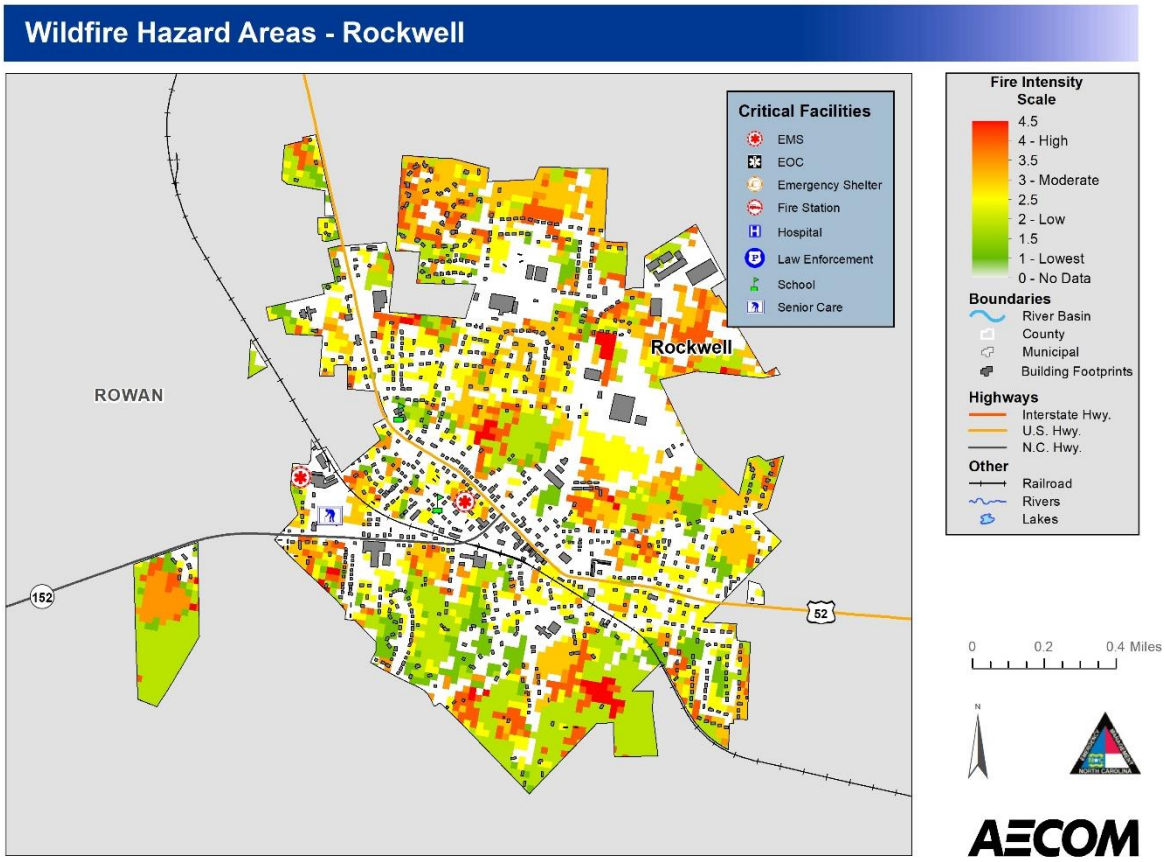


Figure 5- 116: Wildfire hazard areas in Rockwell

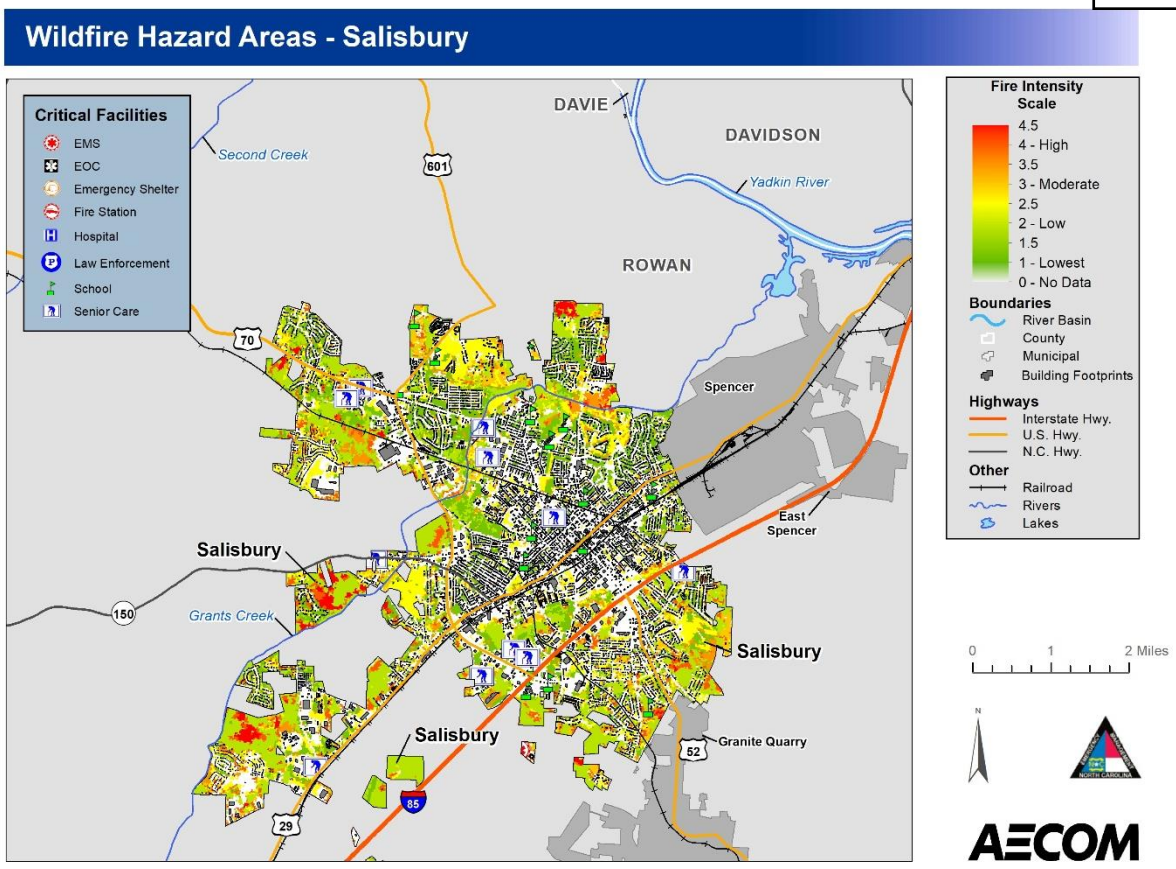


Figure 5- 119: Wildfire hazard areas in Salisbury

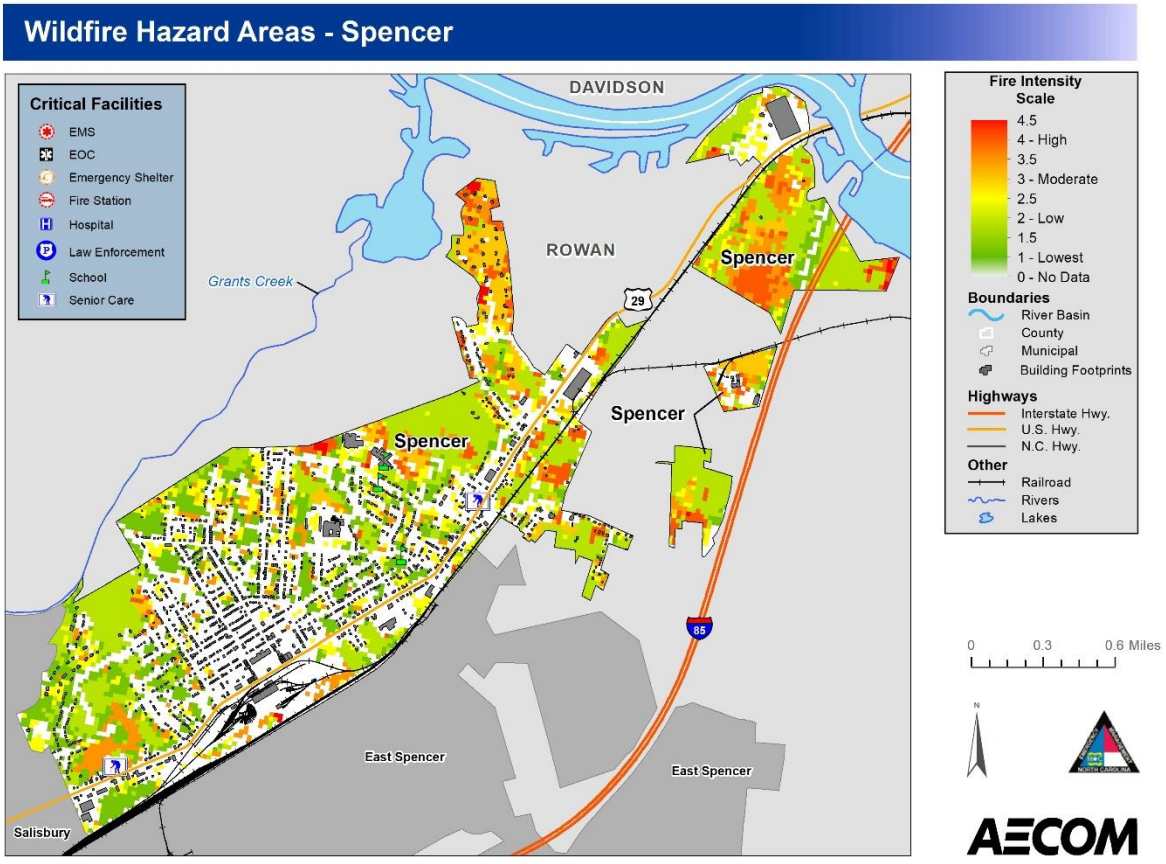


Figure 5- 118: Wildfire hazard areas in Spencer

5.19.3. Extent

The average size of wildfires in the Region is typically small.

Wildfires and the potential for wildfires are rated with multiple different scales, which include Characteristic Fire Intensity Scale (CFIS) and Wildfire Exposure Score (WES). These have been reported by the National Interagency Fire Center's SWRAP which is utilized to determine the number of acres in the planning area that fall within the scales that are representative of the scales below[75]:

1. **Characteristic Fire Intensity Scale (CFIS)**: used to represent the potential of wildfire hazards throughout the planning area and utilizes a standard scale to represent potential wildfire intensity. The categories used are:

Table 5- 70: CFIS Scale Classes and Descriptions from SouthWRAP

Scale Class	Description
1	Very Low: Very small, discontinuous flames less than 1 ft in length, low rate of spread. Easy to suppress with basic firefighting training
2	Low: Small flames less than 2 ft long, short range spotting possible.
3	Moderate: Flames up to 9 ft long, short range spotting possible, and trained firefighters would have difficulty suppressing these wildfires without aircraft support. This increases potential for harm, damage to property, and potentially life-threatening injuries.
4	High: Large flames up to 40 ft in length, medium range spotting is possible, and trained firefighters, engines, and dozers can be ineffective. Direct attack may be effective, and there is a significant potential for harm, serious injury, and damage to property.
5	Very High: Flames exceeding 200 ft in length with extreme fire behavior.

FIS = Fire Intensity Scale
ft = foot

2. **Wildfire Exposure Score (WES):** used to combine chance of wildfire (burn probability) and potential damage to homes from wildfire (damage potential as an estimate of damage to homes due to fire intensity and nearby fuel). The highest exposure value is 10/10 and the lowest exposure value possible is 1/10.
3. **Wildfire Hazard Potential (WHP):** represents the potential hazard impacts from wildfire for long-term planning and not a seasonal outlook on a scale of 1 to 8.

Table 5- 71: WHP Category and Scale from SouthWRAP

	Wildfire Hazard Potential Category
	Minimal Direct Wildfire Impacts

[75] Southern Group of State Foresters [SGSF]. (n.d.). Southern Wildfire Risk Explorer: North Carolina Advanced Viewer [Dataset]. In Southern Wildfire Risk Assessment Portal. SGSF. https://wrap.southernwildfirerisk.com/Map/Pro/#whats-your-risk

	Wildfire Hazard Potential Category
	1 - Lowest
	2
	3
	4
	5
	6
	7
	8 - Highest

5.19.4. Historical Occurrences

Table 5- shows that there have been five wildfires reported to the NIFC in the planning area between 2018 and 2024. The jurisdictions of Harmony, Love Valley, Troutman, China Grove, Cleveland, East Spencer, Faith, Granite Quarry, Landis, Spencer did not have any wildfire occurrences.

Table 5- Yes: Wildfire Occurrences in the planning area from 2018-2024[76]

Incident Date	Incident Name	Closest Jurisdiction	Incident Size (Acres)	Fire Cause
9/26/2022	Woodbrook Lane	Statesville	0.1	Undetermined
10/12/2019	Phaniel Church Rd. Fire	Rockwell	0.39	Human
3/29/2019	Catalina	Mooresville	0.5	Unknown
6/4/2022	Flint School Road	Salisbury	100.5	Undetermined
11/28/2018	Trex Road Fire	Rockwell	0.4	Human

5.19.5. Probability of Future Occurrences

The NRI, which utilizes probabilities from U.S. Department of Agriculture's Forest Services' FSIM Burn Probability and Fire Intensity Level Data, indicates that Iredell County is at a 0.002% chance of experiencing wildfires per year and Rowan County is at a 0.001% chance of experiencing wildfires per year, with both counties at an EAL rating of Very Low and Risk Rating of Very Low (See Table 5- 72). The majority of land within the planning area fall within a 0 rating for the CFIS (Table 5- 74), which is the lowest possible CFIS rating, and majority of the land in the planning area falls at or below 3/10 on the WES scale (Table 5- 73).

[76] National Interagency Fire Center [NIFC]. (2024). Wildland Fire Incident Locations [Dataset]. NIFC. https://data-nifc.opendata.arcgis.com/datasets/nifc::wildland-fire-incident-locations/about

Table 5- 72: NRI Risk Index Values for Wildfires in Iredell and Rowan County

NRI		Iredell	Rowan
EAL	Rating	Very Low	Very Low
	Value	$76,000	$54,000
	Frequency	0.002% Chance Per Year	0.001% Chance Per Year
Risk Index	Rating	Very Low	Very Low
	Score	59.6	58.3
Historic Loss Ratio		Relatively Low	Relatively Low

Table 5- 73: WES represented by the percent of area in the planning area that falls within each category[77].

Wildfire exposure score	Iredell	Rowan
1/10	4 %	3 %
2/10	23 %	17 %
3/10	60 %	69 %
4/10	11 %	9 %
5/10	1 %	1 %
6/10	1 %	1 %
7/10	0 %	0 %
8/10	0 %	0 %
9/10	0 %	0 %
10/10	0 %	0 %

Table 5- 74: CFIS percent of area within each category in the planning area[78] summarized from data in Figure 5- 103 to Figure 5- 119.

Characteristic Fire Intensity Scale Category*	Iredell	Rowan
0	32 %	28 %
1	5 %	6 %
1.5	29 %	32 %
2	9 %	9 %
2.5	1 %	1 %
3	21 %	21 %
3.5	2 %	1 %

[77] Southern Group of State Foresters [SGSF]. (n.d.). Southern Wildfire Risk Explorer: North Carolina Advanced Viewer [Dataset]. In Southern Wildfire Risk Assessment Portal. SGSF. https://wrap.southernwildfirerisk.com/Map/Pro/#whats-your-risk

[78] Southern Group of State Foresters [SGSF]. (n.d.). Southern Wildfire Risk Explorer: North Carolina Advanced Viewer [Dataset]. In Southern Wildfire Risk Assessment Portal. SGSF. https://wrap.southernwildfirerisk.com/Map/Pro/#whats-your-risk

Characteristic Fire Intensity Scale Category*	Iredell	Rowan
4	1 %	1 %
4.5	0 %	0 %
5	0 %	0 %
> 5	0 %	0 %

**The FIS ratings for each count are presented in the table below and are represented with ½ class increments to help visualize the distribution of total area within each class of the FIS.*

Table 5- 75: WHP Category and percentage of area within each category in the planning area[79]

Wildfire Hazard Potential Category	Iredell	Rowan
Minimal Direct Wildfire Impacts		
1 - Lowest	32 %	28 %
2	0 %	0 %
3	0 %	0 %
4	32 %	35 %
5	24 %	23 %
6	12 %	15 %
7	0 %	0 %
8 - Highest	0 %	0 %

Table 5- 76: NRI wildfire hazard data in each jurisdiction based on census tracts in each jurisdiction

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Iredell County *(Unincorporated Area)*	$6,962.12	66.63	Relatively High	76.17	Relatively High	0.000018
Harmony	$4,809.85	77.31	Relatively High	76.63	Relatively High	0.000010
Love Valley	$1,930.47	76.10	Relatively High	75.21	Relatively High	0.000010
Mooresville	$36,649.22	75.43	Relatively High	74.78	Relatively High	0.000010
Statesville	$37,784.76	72.39	Relatively High	71.84	Relatively High	0.000010

[79] Southern Group of State Foresters [SGSF]. (n.d.). Southern Wildfire Risk Explorer: North Carolina Advanced Viewer [Dataset]. In Southern Wildfire Risk Assessment Portal. SGSF. https://wrap.southernwildfirerisk.com/Map/Pro/#whats-your-risk

Jurisdiction	EAL Total	Average Risk Score				Average Expected Annual Frequency
		State Percentile		National Percentile		
		Score	Rating	Score	Rating	
Troutman	$8,658.62	74.83	Relatively High	74.54	Relatively High	0.000010
Rowan County *(Unincorporated Area)*	$1,971.07	64.56	Relatively High	59.84	Relatively Moderate	0.000010
China Grove	$1,886.87	71.69	Relatively High	70.05	Relatively High	0.000010
Cleveland	$3,783.54	72.79	Relatively High	74.99	Relatively High	0.00002
East Spencer	$6,336.05	68.69	Relatively High	69.83	Relatively High	0.000010
Faith	$1,988.81	66.03	Relatively High	66.33	Relatively High	0.000010
Granite Quarry	$2,549.61	65.16	Relatively High	63.91	Relatively High	0.00001
Landis	$3,759.11	68.29	Relatively High	68.07	Relatively High	0.00001
Rockwell	$1,087.09	68.69	Relatively High	68.31	Relatively High	0.00001
Salisbury	$19,257.35	67.80	Relatively High	68.13	Relatively High	0.00002
Spencer	$8,308.75	66.03	Relatively High	63.90	Relatively High	0.00001

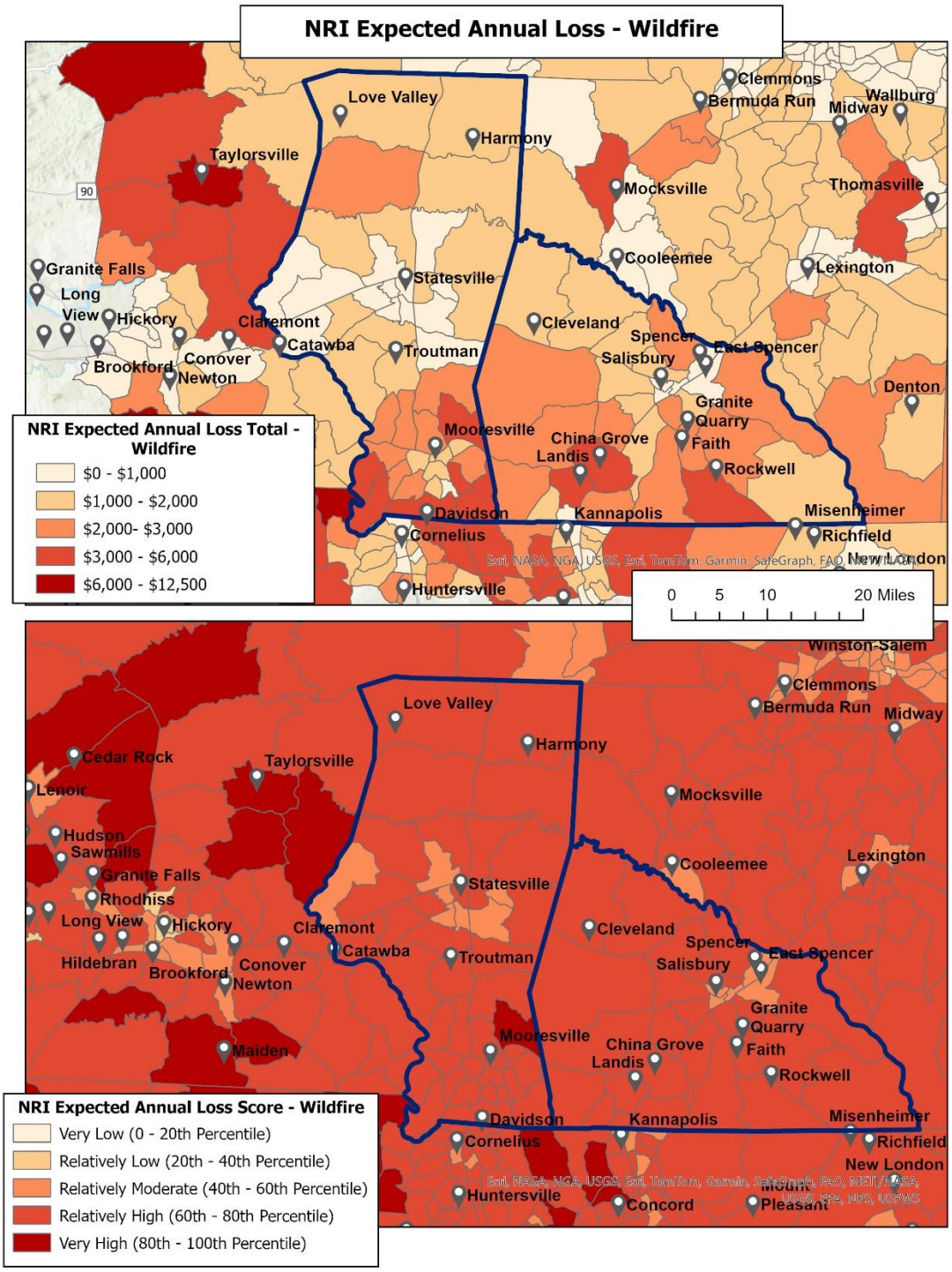


Figure 5- 120: NRI Wildfire EAL Total and Score for the census tracts in the planning area

5.19.6. Wildfire Hazard Vulnerability and Impact

Wildfires can cause significant damage to property and threatens the lives of people who are unable to evacuate wildfire-prone areas. Many individual homes and cabins, subdivisions, resorts, recreational areas, organizational camps, businesses, and industries are located within

high wildfire hazard areas. Further, the increasing demand for outdoor recreation places more people in wildlands during holidays, weekends, and vacation periods. Unfortunately, wildland residents and visitors are rarely educated or prepared for wildfire events that can sweep through the brush and timber and destroy property within minutes.

Wildfires can result in severe economic losses. Businesses that depend on timber, such as paper mills and lumber companies, experience losses that are often passed along to consumers through higher prices, and sometimes jobs are lost. The high cost of responding to and recovering from wildfires can deplete state resources and increase insurance rates. The economic impact of wildfires can also be felt in the tourism industry if roads and tourist attractions are closed due to health and safety concerns, such as reduced air quality by means of wildfire smoke and ash.

The areas of the state with the largest wildfire hazard occurrence are also within the most exposed regions. Many areas in the eastern and western part of the state have high risk for wildfire since there are large, forested areas in these regions. However, some counties in the central part of the state also have higher risk. Still, a county's exposure score plays a major role and counties with high exposure and high wildfire risk score highest. In Iredell County, 87% of land is below a 3/10 rating on the WES and 81% of land in Rowan County is below the 3/10 WES category. In terms of Wildfire Hazard Potential, 32% of the area in Iredell County and 28% of Rowan County has lowest direct impact potential, which means that those areas are at a low risk of experiencing extreme fire behavior during fire weather conditions. But the majority of the area in Iredell County and Rowan County are between a 4 and 6 wildfire hazard potential category, which means those areas are at an increased risk of experiencing extreme fire behaviour during severe fire weather conditions.

5.19.7. Future Vulnerability: Problem Statements

People

There are multiple potential impacts for residents in the planning area because of wildfires, such as diminished air quality. Individuals who have preexisting respiratory conditions or disabilities, 11.7% in Iredell and 16% in Rowan County of the total residents, may be disproportionately impacted by wildfire events. To reduce impacts of wildfire to residents, the planning area should consider developing community education programs to prepare the public for wildfires and reduce the health impact of wildfires to those with preexisting conditions.

Changes in Development or Housing Characteristics

Iredell County has increased the number of housing units by 13.72% between 2018 and 2023 which reflects the projected population growth of 20% highlighted by the 2045 Horizon Plan. Rowan County also has experienced a 6.29% increase in housing units, having experienced a 7% increase in population between 2010 and 2021. As a result of the increase in population and housing units, the planning area should consider implementing restrictions for development in

high wildfire areas or consider requiring new development in wildfire hazard areas to take precautions to prevent wildfire damages to new homes in those areas.

Economy

Wildfire vulnerabilities are not expected to impact or be impacted by changes in economic conditions.

Natural Environment

Wildfires may cause damage to the natural environment by destroying habitat area, causing habitat fragmentation, contributing to habitat loss, killing vegetation, and potentially killing animals. A secondary environmental impact from wildfire is that the decrease in vegetation causes increased risk of flood or landslides and reduced water quality. To prevent excessive damages the planning area should consider providing wildfire prevention training and education for residents in the planning area to avoid negative impacts due to wildfire occurrence.

First responders

First responders are at a significant risk to serious injury and life-threatening injuries when assisting with wildfire emergencies. Wildfires may also reduce the capacity for emergency services to respond to emergencies in surrounding areas. As a result, the planning area should consider providing annually occurring wildfire training for first responders, establishing clear evacuation procedures for preventing injuries to those in the planning area.

Continuity of Operation

Wildfires can result in impacted continuity of operations due to power outages, damaged roads, damages infrastructure, and damages critical facilities. The planning area should consider conducting a periodic review of inventory of critical resources, emergency response equipment and supplies, and wildfire prevention activities to limit occurrences of wildfire in the planning area.

Climate Change

According to the North Carolina Climate Science Report, higher annual and seasonal average temperatures and associated increases in drying rates will lead to an increased likelihood of conditions conducive to wildfires.

While there has been a long-term upward trend in the number of wildfires in North Carolina, the total acreage burned has shown a downward trend. Increases in the number of wildfires will nevertheless pose a major risk for human health and emergency services, putting more lives at risk of fire related injuries, fatalities, and property losses. It is likely that future droughts in their multiple forms in North Carolina will be more frequent and intense due to higher temperatures leading to increased evaporation, therefore, it is likely the frequency of climate conditions conducive to wildfires in North Carolina will increase.

Wildfire risk is greatest among potentially underserved communities in the southern and western regions of the state due to large wildland areas and limited warning and response capabilities.

5.20. CONCLUSIONS ON HAZARD RISK

The hazard profiles presented reflect the best available data for each natural hazard and include the NRI risk ratings, values, and scores where applicable. Dam hazards and hazardous materials arent included in this table because the NRI does not report information about those hazards. Below is the summary of the reviewed hazards from the NRI with the hazard name listed on the NRI and which hazard it is included under in the HMP:

Table 5- 77: NRI Hazard Risk Summary for Conclusions on Hazard Risk

HMP Hazard Name	NRI Hazard Name	NRI Value Type	Iredell County	Rowan County
Drought	Drought	EAL Value	$285,000	$748,000
		Risk Index Rating	Relatively Low	Relatively Moderate
		Risk Index Score	81.7	92.7
		Historic Loss Ratio	Relatively Moderate	Relatively Moderate
Earthquake	Earthquake	EAL Value	$1,100,000	$714,000
		Risk Index Rating	Relatively Low	Relatively Low
		Risk Index Score	81.8	79
		Historic Loss Ratio	Relatively Moderate	Relatively Low
Hail	Hail	EAL Value	$437,000	$332,000
		Risk Index Rating	Relatively Low	Relatively Low
		Risk Index Score	79.3	78
		Historic Loss Ratio	Very Low	Very Low
Heat Wave	Heat Wave	EAL Value	$197,000	$63,000
		Risk Index Rating	Relatively Low	Relatively Low
		Risk Index Score	65	49.5
		Historic Loss Ratio	Relatively Low	Relatively Low
Hurricane/ Tropical Storm	Hurricane	EAL Value	$2,400,000	$2,000,000
		Risk Index Rating	Relatively Low	Relatively Low
		Risk Index Score	75.9	76.3
		Historic Loss Ratio	Relatively Low	Relatively Low
Winter Storm and Freeze	Ice Storm	EAL Value	$2,300,000	$476,000
		Risk Index Rating	Very High	Relatively High
		Risk Index Score	98	90.1
		Historic Loss Ratio	Relatively Low	Very Low
Landslide	Landslide	EAL Value	$122,000	$122,000
		Risk Index Rating	Relatively Moderate	Relatively Moderate
		Risk Index Score	82	88.6
		Historic Loss Ratio	Very Low	Very Low
Lightning	Lightning	EAL Value	$607,000	$99,000
		Risk Index Rating	Relatively Moderate	Relatively Low
		Risk Index Score	90	57.3

HMP Hazard Name	NRI Hazard Name	NRI Value Type	Iredell County	Rowan County
		Historic Loss Ratio	Relatively Low	Very Low
Flood	Riverine Flooding	EAL Value	$273,000	$334,000
		Risk Index Rating	Relatively Low	Relatively Low
		Risk Index Score	40	49.2
		Historic Loss Ratio	Very Low	Very Low
Severe Thunderstorms	Strong Wind	EAL Value	$1,600,000	$744,000
		Risk Index Rating	Relatively High	Relatively Moderate
		Risk Index Score	89.4	79.6
		Historic Loss Ratio	Relatively Low	Relatively Low
Tornado	Tornado	EAL Value	$5,900,000	$4,700,000
		Risk Index Rating	Relatively Moderate	Relatively Moderate
		Risk Index Score	88.1	88.2
		Historic Los s Ratio	Relatively Moderate	Relatively Moderate
Wildfire	Wildfire	EAL Value	$76,000	$54,000
		Risk Index Rating	Very Low	Very Low
		Risk Index Score	59.6	58.3
		Historic Loss Ratio	Relatively Low	Relatively Low
Winter Storm and Freeze	Winter Weather	EAL Value	$108,000	$82,000
		Risk Index Rating	Relatively Moderate	Relatively Moderate
		Risk Index Score	67.6	66.1
		Historic Loss Ratio	Relatively Low	Very Low

For more information about the NRI, please review the NRI Technical Documentation[80] which outlines evaluation methods, data used, and hazard specific considerations or Section 5.3.7. which provides a brief description of the NRI value types.

[80] Zuzak, C., Sheehan, A., Goodenough, E., McDougall, A., Stanton, C., McGuire, P., Mowrer, M., Roberts, B., & Rozelle, J. (2023). National Risk Index: Technical Documentation. In Federal Emergency Management Agency, FEMA.gov. Retrieved May 28, 2024, from https://www.fema.gov/sites/default/files/documents/fema_national-risk-index_technical-documentation.pdf

SECTION 6: CAPABILITY ASSESSMENT

This section of the Plan discusses the capability of the communities in the Iredell Rowan Region to implement hazard mitigation activities. It consists of the following four subsections:

6.1. WHAT IS A CAPABILITY ASSESSMENT?
6.2. CONDUCTING THE CAPABILITY ASSESSMENT
6.3. CAPABILITY ASSESSMENT FINDINGS
6.4. CONCLUSIONS ON LOCAL CAPABILITY

6.1. What is a Capability Assessment?

The purpose of conducting a capability assessment is to determine the ability of a local jurisdiction to implement a comprehensive mitigation strategy and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs, or projects[1].As in any planning process, it is important to try to establish which goals, objectives, and/or actions are feasible based on an understanding of the organizational capacity of those agencies or departments tasked with their implementation. A capability assessment helps to determine which mitigation actions are practical, and likely to be implemented over time, given a local government's planning and regulatory framework, level of administrative and technical support, number of fiscal resources, and current political climate.

A capability assessment has two primary components: 1) an inventory of a local jurisdiction's relevant plans, ordinances, or programs already in place and 2) an analysis of its capacity to carry them out. Careful examination of local capabilities will detect any existing gaps, shortfalls, or weaknesses with ongoing government activities that could hinder proposed mitigation activities and possibly exacerbate community hazard vulnerability. A capability assessment also highlights the positive mitigation measures already in place or being implemented at the local government level, which should continue to be supported and enhanced through future mitigation efforts.

The capability assessment completed for the Iredell Rowan Region serves as a critical planning step and an integral part of the foundation for designing an effective hazard mitigation strategy. Coupled with the Risk Assessment, the Capability Assessment helps identify and target meaningful mitigation actions for incorporation in the Mitigation Strategy portion of the Hazard Mitigation Plan. It not only helps establish the goals and objectives for the region to pursue under this Plan, but it also ensures that those goals and objectives are realistically

[1] While the Final Rule for implementing the Disaster Mitigation Act of 2000 does not require a local capability assessment to be completed for local hazard mitigation plans, it is a critical step in developing a mitigation strategy that meets the needs of the region while considering their own unique abilities. The Rule does state that a community's mitigation strategy should be
"based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools" (44 CFR, Part 201.6(c)(3)).

achievable under given local conditions.

6.2. Conducting the Capability Assessment

To facilitate the inventory and analysis of local government capabilities within the Iredell Rowan counties, a detailed Capability Assessment Survey was completed for each of the participating jurisdictions based on the information found in existing hazard mitigation plans and on local government websites. The survey questionnaire compiled information on a variety of "capability indicators" such as existing local plans, policies, programs, or ordinances that contribute to and/or hinder the region's ability to implement hazard mitigation actions. Other indicators included information related to the communities' fiscal, administrative, and technical capabilities, such as access to local budgetary and personnel resources for mitigation purposes. The current political climate, an important consideration for any local planning or decision-making process, was also evaluated with respect to hazard mitigation. At a minimum, survey results provide an extensive inventory of existing local plans, ordinances, programs, and resources that are in place or under development in addition to their overall effect on hazard loss reduction. However, the survey instrument can also serve to identify gaps, weaknesses, or conflicts that counties and local jurisdictions can recast as opportunities for specific actions to be proposed as part of the hazard mitigation strategy.

6.3. Capability Assessment Findings

The findings of the capability assessment are summarized in this Plan to provide insight into the relevant capacity of the jurisdictions in the Iredell Rowan Region to implement hazard mitigation activities. All information is based upon the review of existing hazard mitigation plans and local government websites through the Capability Assessment Survey and input provided by local government officials during meetings of the Iredell Rowan Regional Hazard Mitigation Planning Committee.

6.3.1. Planning and Regulatory Capability

Planning and regulatory capability is based on the implementation of plans, ordinances, and programs that demonstrate a local jurisdiction's commitment to guiding and managing growth, development, and redevelopment in a responsible manner while maintaining the general welfare of the community. It includes emergency response and mitigation planning, comprehensive land use planning, and transportation planning; the enforcement of zoning or subdivision ordinances and building codes that regulate how land is developed, and structures are built; as well as protecting environmental, historic, and cultural resources in the community. Although some conflicts can arise, these planning initiatives generally present significant opportunities to integrate hazard mitigation principles and practices into the local decision-making process.

This assessment is designed to provide a general overview of the key planning and regulatory tools and programs that are in place or under development for the jurisdictions in the Iredell Rowan Region along with their potential effect on loss reduction. This information will help identify opportunities to address existing gaps, weaknesses, or conflicts with other initiatives in addition to integrating the implementation of this Plan with existing planning mechanisms

where appropriate.

Table 6- 1 provides a summary of the relevant local plans, ordinances, and programs already in place or under development for the jurisdictions in the Iredell Rowan Region. Listed below are existing plans, studies, reports and technical information reviewed for plan development and update. Relevant information such as, hazard analysis, NFIP data, building codes, ordinances and communication procedures, existing data, and shared objectives were incorporated into the mitigation plan via coordination with relevant agencies, prioritizing hazards, prioritizing mitigation actions Each of these local existing plans, studies, reports, ordinances, and programs should be considered available mechanisms for incorporating the requirements of the Iredell Rowan Regional Hazard Mitigation Plan.

1. ***Comprehensive Plans: Each community will incorporate the goals, objectives, and actions of the HMP into their comprehensive plan***
    a. **Review and Alignment:** Conducting a thorough review of the comprehensive plan to identify areas where hazard mitigation strategies can be integrated. This includes land use planning, zoning regulations, and environmental protection policies.
    b. **Stakeholder Engagement:** Engaging with stakeholders, including local government officials, community leaders, and residents, to ensure that the integration process reflects the community's needs and priorities.
    c. **Policy Updates:** Updating policies and ordinances to incorporate hazard mitigation measures, such as floodplain management, wildfire risk reduction, and earthquake-resistant building codes.
2. ***Capital Improvement Plans (CIPs): the integration of the HMP into the CIPs will ensure that infrastructure investments consider hazard mitigation***
    a. **Project Prioritization:** Prioritizing projects that address identified hazards, such as upgrading stormwater management systems, reinforcing critical infrastructure, and enhancing emergency response capabilities.
    b. **Funding Allocation:** Allocating funds for mitigation projects within the CIP, ensuring that resources are available for both immediate and long-term mitigation efforts.
    c. **Monitoring and Evaluation:** Establishing mechanisms to monitor and evaluate the effectiveness of mitigation projects, ensuring that they meet the intended goals and provide resilience against future hazards.
3. ***Other planning Mechanisms: in addition to comprehensive plans and CIPs, the HMP will be integrated into other relevant planning mechanisms such as:***
    a. **Emergency Operations Plans (EOPs):** ensuring that hazard mitigation strategies are included in emergency response and recovery plans, enhancing the community's preparedness and resilience
    b. **Economic Development Plans:** Incorporating mitigation measures into economic development strategies to protect businesses and promote sustainable growth
    c. **Environmental and Natural Resource Plans:** Aligning hazard mitigation with environmental conservation efforts, such as protecting wetlands and preserving open spaces that can serve as natural buffers against hazards
4. ***Implementation and Coordination: To facilitate the integration process, a dedicated Hazard Mitigation Planning Committee (HMPC) will be established and the HMPC will***

a. **Coordinate Efforts:** work with various departments and agencies to ensure mitigation strategies are consistently applied across planning mechanisms
b. **Provide Training**: Offer training and resources to local officials and planners on incorporating hazard mitigation into their respective areas of responsibility
c. **Track Progress**: Develop a tracking system to monitor the integration process and report on progress to community leaders and stakeholders

Table 6- 1 provides a summary of the capability assessment results for the Iredell Rowan Region regarding relevant plans, ordinances, and related capabilities. A check (✓) indicates the presence and a (--) indicates the absence of that type of plan, ordinance, or related capability in that jurisdiction.

Table 6- 1:Plans, ordinances, programs, and related capabilities self-reported by each jurisdiction

Jurisdiction	Hazard Mitigation Plan	Comprehensive Use Plan	Floodplain Management Plan	Open Space Management Plan	Stormwater Management Plan	Emergency Operations Plan	SARA Title III Plan	Radiological Emergency Plan	Continuity of Operations Plan	Evacuation Plan	Disaster Recovery Plan	Capital Improvement Plan	Economic Development Plan	Historic Preservation Plan	Transportation Plan	Flood Damage Prevention Ordinance	Flood Prevention Ordinance	Zoning Ordinance	Subdivision Ordinance	Site Plan Review Requirements	Unified Development Ordinance	Post Disaster Redevelopment Ordinance	Building Code	Fire Code	Community Wildfire Protection Plan	National Flood Insurance Program	Community Rating System
Iredell County	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	-
Harmony	✓	✓	-	✓	-	✓	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	-	-	-
Love Valley	✓	-	-	✓	-	✓	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	-	-	-
Mooresville	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	✓	✓	✓		✓	-	✓	✓	-	✓	✓	-	-	-
Statesville	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	-
Troutman	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓	-	-	-	✓	✓	✓	✓	-	✓	-	✓	✓	-	✓	-
Rowan County	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	-	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	-
China Grove	-	-	✓	-	✓	-	-	-	-	-	-	-	-	-	-	-	✓	-	-	✓	✓	-	-	-	-	✓	-

Jurisdiction	Hazard Mitigation Plan	Comprehensive Use Plan	Floodplain Management Plan	Open Space Management Plan	Stormwater Management Plan	Emergency Operations Plan	SARA Title III Plan	Radiological Emergency Plan	Continuity of Operations Plan	Evacuation Plan	Disaster Recovery Plan	Capital Improvement Plan	Economic Development Plan	Historic Preservation Plan	Transportation Plan	Flood Damage Prevention Ordinance	Flood Prevention Ordinance	Zoning Ordinance	Subdivision Ordinance	Site Plan Review Requirements	Unified Development Ordinance	Post Disaster Redevelopment Ordinance	Building Code	Fire Code	Community Wildfire Protection Plan	National Flood Insurance Program	Community Rating System
Cleveland	✓	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
East Spencer	✓	–	✓	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Faith	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	–	–
Granite Quarry	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	✓	–	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓	–
Landis	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	–	✓	–	✓	✓	✓		✓	✓	✓	✓	✓	✓	–	✓	–
Rockwell	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	–	✓	–
Salisbury	✓	–	✓	–	–	–	✓	✓	–	–	–	–	✓	–	–	–	–	–	–	–	–	–	–	✓	–	–	–
Spencer	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	–	–	–	–	✓	–	✓	✓	✓	✓	✓	✓	–	–	✓	–	–

A more detailed discussion on the region's planning and regulatory capability follows.

6.3.2. Emergency Management

Hazard mitigation is widely recognized as one of the four primary phases of emergency management. The three other phases include preparedness, response, and recovery. Each phase is interconnected with hazard mitigation, as Figure 6- 1 suggests. Opportunities to reduce potential losses through mitigation practices are most often implemented before disaster strikes, such as the elevation of flood prone structures or the continuous enforcement of policies that prevent and regulate development that is vulnerable to hazards due to its location, design, or other characteristics. Mitigation opportunities will also be presented during immediate preparedness or response activities, such as installing storm shutters in advance of a hurricane, and certainly during the long-term recovery and redevelopment process following a hazard event.

*Figure 6- 1**: The Four Phases of Emergency Management***

Planning for each phase is a critical part of a comprehensive emergency management program and a key to the successful implementation of hazard mitigation actions. As a result, the Capability Assessment Survey asked several questions across a range of emergency management plans to assess the Iredell Rowan Region's willingness to plan and their level of technical planning proficiency.

6.3.2.1. Updated Capabilities

Iredell County

- **Integrated Emergency Management:** The County has been working on integrating all the phases of emergency management into a single plan. Although they have succeeded in integrating many phases, there is still work to be done to complete the action and further

incorporate the HMP into the Horizon 2040 Plan.

- **Partnership with Iredell County and Municipalities in HMP:** The County continues to work with municipalities to develop hazard mitigation guidelines which integrate planning and zoning at the local level
- **Automated Coordination:** The County utilizes technology to develop an automated system that coordinates information on plans, development, roadways, and other information.

Statesville

- **Hazard Mitigation Integration:** The City of Statesville works with Iredell County to develop guidelines for hazard mitigation and integrate planning and zoning at the local level. This will continue to occur as new guidelines are developed, new plans are available, and new data is available to improve hazard mitigation planning.

Rowan County

- **Specialized Taskforces:** Rowan County Emergency Services has works to establish specialized taskforces to focus on technical rescues, water rescues, HazMat, and SAR. The Administrative policy was put into place in 2024.

Salisbury

- **Public Education and outreach:** Rowan County and municipalities continue to reach out to the public through several ways such as in-person, print media, and social media to spread awareness about natural hazard risks and preparedness.

China Grove

- **Increased Full-time Firefighters**: in 2023, the Town of China Grove added three new fulltime firefighters with increased the number of positions by 46%.
- **Discussion of Recent Events**: the Town of China Grove continues to work with local entities and government to plan and discuss recent events and storms, and this includes discussion of new mitigation actions needs and ongoing actions.

Cleveland

- **Increased Volunteer Fire Department and Rescue Staff:** The Town continues to add paid staffing to the volunteer workforce to continue to combat the lack of volunteers.

East Spencer

- **Increased Fulltime Fire Department:** The Town has increased the number of full-time fire department personnel by hiring 6 people.

Faith

- **Increased Emergency Response Personnel:** The Town has added paid emergency response personnel for peak times from Monday to Friday.
- **Critical Facilities Database**: The Town has continued to update the database of critical facilities to increase information about facilities.

Granite Quarry

- **Increased Firefighters:** the Town of Granite Quarry Fire Department has added new firefighters to the staff and additional part time on the weekends. The Fire Department has become a medium rescue certified by state standards.

Hazard Mitigation Plan: A hazard mitigation plan represents a community's blueprint

for how it intends to reduce the impact of natural and human-caused hazards on people and the built environment. The essential elements of a hazard mitigation plan include a risk assessment, capability assessment, and mitigation strategy.

- Each jurisdiction in the planning area has participated in the HMP update process for the 2024 plan update.

Disaster Recovery Plan: A disaster recovery plan serves to guide the physical, social, environmental, and economic recovery and reconstruction process following a disaster. In many instances, hazard mitigation principles and practices are incorporated into local disaster recovery plans to capitalize on opportunities to break the cycle of repetitive disaster losses. Disaster recovery plans can also lead to the preparation of disaster redevelopment policies and ordinances to be enacted following a hazard event.

- Rowan County has a disaster recovery plan in place. It is an individual annex to the Emergency Operations plan which also covers the municipalities.
- Iredell County has a disaster recovery plan in place

Emergency Operations Plan: An emergency operations plan outlines responsibility and how resources are deployed during and following an emergency or disaster.

- Iredell County and Rowan County each maintain emergency operations plans through their Emergency Management and Emergency Services Departments, respectively. These plans have been formally adopted by each of the municipalities located within their respective counties.

Continuity of Operations Plan: A continuity of operations plan establishes a chain of command, line of succession, and plans for backup or alternate emergency facilities in case of an extreme emergency or disaster event.

- **Iredell County** and all its municipalities have adopted a continuity of operations plan that is maintained by the county.
- **Rowan County** has adopted a continuity of operations plan, but none of its municipalities have adopted the plan, nor have they formally adopted a continuity of operations plan of their own**. East Spencer, Faith, Granite Quarry, Landis, Rockwell, and Salisbury** also follow Continuity of operations plans.

6.3.3. General Planning

The implementation of hazard mitigation activities often involves agencies and individuals beyond the emergency management profession. Stakeholders may include local planners, public works officials, economic development specialists, and others. In many instances, concurrent local planning efforts will help to achieve or complement hazard mitigation goals, even though they are not designed as such. Therefore, the Capability Assessment Survey also asked questions regarding general planning capabilities and the degree to which hazard mitigation is integrated into other on-going planning efforts in the Iredell Rowan Region.

Comprehensive Land Use Plan: A comprehensive land use plan establishes the overall vision for what a community wants to be and serves as a guide for future

governmental decision making. Typically, a comprehensive plan contains sections on demographic conditions, land use, transportation elements, and community facilities. Given the broad nature of the plan and its regulatory standing in many communities, the integration of hazard mitigation measures into the comprehensive plan can enhance the likelihood of achieving risk reduction goals, objectives, and actions. The communities below will, when appropriate, include policies regarding the reduction of vulnerability of future development in high hazard areas by reviewing development regulations.

Iredell County has adopted a comprehensive plan called the 2030 Horizon Plan.

- Harmony developed a town land use plan in 2006.
- Mooresville has a comprehensive land use plan in place.
- Statesville has developed a land development plan.
- Troutman adopted an area land use plan.

Rowan County has developed and adopted two land use plans, the West Rowan Land Use Plan, and the East Rowan Land Use Plan.

- China Grove has adopted a comprehensive plan.
- Granite Quarry has developed a comprehensive plan.
- Rockwell adopted a land use plan.
- Salisbury's Planning Department developed a comprehensive plan called Vision 2020.
- Spencer has adopted a land use plan through 2025.

Capital Improvements Plan: A capital improvements plan guides the scheduling of spending on public improvements. A capital improvements plan can serve as an important mechanism for guiding future development away from identified hazard areas. Limiting public spending in hazardous areas is one of the most effective long-term mitigation actions available to local governments. The communities below have determined that the goals and actions of the hazard mitigation plan will be considered in the next 5-year capital improvements planning processes, which may be updated annually.

- Iredell County Finance is responsible for the development of the county's 5-year capital improvements plan.
- Mooresville has a capital improvements program committee that guides their program.
- Statesville's Finance Department develops and implements their capital improvements program.
- Troutman develops a capital improvements program.
- Rowan County's Finance Department is responsible for the county's capital improvements program.
- China Grove has a capital improvements program that is overseen by the town manager.
- Cleveland has a capital improvements plan for its wastewater system.
- East Spencer has a Sewer Collection Capital Improvements Plan.
- Salisbury's Finance Department oversees its capital improvements program.

Historic Preservation Plan: A historic preservation plan is intended to preserve historic structures or districts within a community. An often-overlooked aspect of the historic preservation plan is the assessment of buildings and sites located in areas subject to natural hazards and the identification of ways to reduce future damage. This may involve retrofitting or relocation techniques that account for the need to protect buildings that do not meet current building standards or are within a historic district that cannot easily be relocated out of harm's way. Where possible, the community below should implement identified mitigation actions related to the retrofitting or relocation of historic structures.

- Salisbury is the only participating jurisdiction that has a historic preservation plan.

Zoning Ordinance: Zoning represents the primary means by which land use is controlled by local governments. As part of a community's police power, zoning is used to protect the public health, safety, and welfare of those in each jurisdiction that maintains zoning authority. A zoning ordinance is the mechanism through which zoning is typically implemented. Since zoning regulations enable municipal governments to limit the type and density of development, a zoning ordinance can serve as a powerful tool when applied in identified hazard areas. The communities below will, when appropriate, include mitigation policies regarding limiting the extension of public infrastructure in high hazard areas.

- Iredell County has a land development code that outlines zoning in chapters 2 and 4.
- Harmony and Mooresville have both developed zoning ordinances enforced by their respective planning departments.
- Statesville and the Town of Troutman both have Unified Development Ordinances that include zoning regulations and are administered by their planning departments.
- Rowan County Code, Chapter 21 outlines the Planning and Development Department's role in zoning.
- China Grove and Granite Quarry address zoning districts and development requirements in their zoning ordinances.
- Cleveland, East Spencer, Landis, and Rockwell all have zoning ordinances administered by each of their planning and/or zoning departments.
- Salisbury's Land Development Ordinance outlines zoning districts in Chapter 2.
- Spencer's Land Management Department explains its land usage policies with regards to zoning in Title XV, Chapter 155.

Subdivision Ordinance: A subdivision ordinance is intended to regulate the development of residential, commercial, industrial, or other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development. Subdivision design that accounts for natural hazards can dramatically reduce the exposure of future development.

- Iredell County has adopted a subdivision ordinance as part of its Land Development Code. Many of its incorporated municipalities have also adopted subdivision ordinances including Mooresville, Statesville, and Troutman.

- Rowan County has adopted a subdivision ordinance as part of its county code. Cleveland and Faith are the only two municipalities in the county without some form of subdivision regulations. Many of the jurisdictions with subdivision regulations have incorporated these rules into their Unified Development Ordinance or Land Development Code.

Building Codes, Permitting, and Inspections: Building codes regulate construction standards. In many communities, permits and inspections are required for new construction. Decisions regarding the adoption of building codes (that account for hazard risk), the type of permitting process required both before and after a disaster, and the enforcement of inspection protocols all affect the level of hazard risk faced by a community.

- North Carolina has a state compulsory building code, which applies throughout the state; however, jurisdictions may adopt codes if approved as providing adequate minimum standards.

The building code is enforced throughout Iredell County (including within the municipalities) by the county Building Standards Division. The building code is enforced throughout Rowan County by the county Building Code Enforcement Department.

The adoption and enforcement of building codes by local jurisdictions is routinely assessed through the Building Code Effectiveness Grading Schedule (BCEGS) program developed by the Insurance Services Office, Inc. (ISO)[2] In North Carolina, the North Carolina Department of Insurance assesses the building codes in effect in a particular community and how the community enforces its building codes *with special emphasis on mitigation of losses from natural hazards*. The results of BCEGS assessments are routinely provided to ISO's member private insurance companies, which in turn may offer ratings credits for new buildings constructed in communities with strong BCEGS classifications. The concept is that communities with well-enforced, up-to-date codes should experience fewer disaster-related losses and, as a result, should have lower insurance rates.

In conducting the assessment, ISO collects information about personnel qualification and continuing education and the number of inspections performed per day. This type of information combined with local building codes is used to determine a grade for that jurisdiction. The grades range from 1 to 10 with a BCEGS grade of 1 representing exemplary commitment to building code enforcement and a grade of 10 indicating less than minimum recognized protection.

[2] Participation in BCEGS is voluntary and may be declined by local governments if they do not wish to have their local building codes evaluated.

6.3.3.1. Updated Capabilities

Rowan County

- **Mitigation in Planning and Zoning**: The County continues to work towards focusing on mitigation in planning and zoning.
- **China Grove**: the Town continues to maintain the municipal street system to prevent damage to powerlines.

6.3.4. Floodplain Management

Flooding represents the greatest natural hazard facing the nation. At the same time, the tools available to reduce the impacts associated with flooding are among the most developed when compared to other hazard-specific mitigation techniques. In addition to approaches that cut across hazards such as education, outreach, and the training of local officials, the *National Flood Insurance Program* (NFIP) contains specific regulatory measures that enable government officials to determine where and how growth occurs relative to flood hazards. Participation in the NFIP is voluntary for local governments; however, program participation is strongly encouraged by FEMA as a first step for implementing and sustaining an effective hazard mitigation program. It is therefore used as part of this assessment as a key indicator for measuring local capability.

6.3.4.2. Minimum NFIP Requirements

For a county or municipality to participate in the NFIP and remain eligible, they must adopt a local flood damage prevention ordinance that requires jurisdictions to follow established minimum building standards in the floodplain. These standards require that all new buildings and substantial improvements to existing buildings will be protected from damage by a 100-year flood event and that new development in the floodplain will not exacerbate existing flood problems or increase damage to other properties.

A key service provided by the NFIP is the mapping of identified flood hazard areas. Once completed, the Flood Insurance Rate Maps (FIRMs) are used to assess flood hazard risk, regulate construction practices, and set flood insurance rates. FIRMs are an important source of information to educate residents, government officials, and the private sector about the likelihood of flooding in their community. Communities must adopt FIRMs or flood maps that delineate Special Flood Hazard Areas (SFHAs), which are areas with a 1% or greater chance of flooding every year, also known as 100-year floodplain areas.

Communities are required to enforce floodplain development with floodplain development permits for any development or construction in flood-prone areas to ensure that any new development adheres to NFIP standards. This includes building elevation requirements in new construction and substantially improved buildings. Communities must also require properties in specific flood zones to purchase flood insurance, especially for properties receiving federal financial assistance in a SFHA. Communities must enforce floodplain management ordinances and penalize violations, maintain and update floodplain mapping data, and ensure substantial damage or substantial improvement provisions are implemented.

NFIP communities in the planning area are required to follow the minimum standards set by the State and the County that they are in, and these NFIP requirements for Iredell County and Rowan County are listed in Section 6.3.4.3 and Section 6.3.4.4. If any NFIP communities have floodplain regulations that are more restrictive than the state or county regulations, they will be listed in Appendix E where the communities provided supplemental information to specify implementation and enforcement, regulations, communication methods, substantial damage, substantial improvement, or corrective procedures for enforcing their floodplain regulations.

6.3.4.3. Iredell County

Implementation and Enforcement Details: The Planning Director in Iredell County is the Floodplain Administrator for the county and is responsible for administering and implementing the regulations outlined by the Flood Damage Prevention Ordinance. Any development within the floodplain is required to obtain a flood development permit and floodplain administrators are required to:

- Review all floodplain development applications, issue permits for all proposed development and review all proposed development within the SFHAs to assure that all necessary local, state, and federal permits have been received.
- Notify adjacent communities and NC Department of Public Safety (NCDPS), NCEM, and the state NFIP coordinator prior to alteration or relocation of watercourse
- Prevent encroachments into floodways and non-encroachment areas unless flood hazard reduction provisions are met
- Make onsite inspections of work in progress, issue stop work orders as required, revoke development permits as required, make periodic inspections throughout the SFHAs, follow corrective procedures, coordinate revisions to FIS/FIRMS, and maintain current map repository.

Regulations:

- All new construction and substantial improvement must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure
- All new construction and substantial improvements must be constructed with methods, equipment, and practices that minimize flood damage.
- All new heating, electrical, ventilation, plumbing, air conditioning, and other service equipment at or above the Regulatory Flood Protection Elevation (RFPE) and avoid water entering the components of the equipment.
- All new water supply systems, sanitary sewage systems, and on-site waste disposal systems should be designed to minimize or eliminate infiltration of floodwaters into the system
- All development protocol should have public utilities and facilities such as sewer, gas, electrical, and water systems constructed to minimize flood damage.
- All subdivision developments and development proposals should have adequate drainage provided to reduce flood hazard exposure.
- Any structure partially located in the SFHA should meet all the requirements for new

construction and substantial improvements.

- When a structure is in multiple flood hazard zones, the provisions for the more restrictive flood hazard risk zone and the highest Base Flood Elevation (BFE) should apply
- Fill is prohibited in SFHAs including the construction of buildings on fill
- All development in the SFHA or Floodplain are required to follow the regulations specified in the Flood Damage Prevention Ordinance to obtain a floodplain development permit

Substantial Damage is any damage of any origin sustained by a structure during a 1-year period where the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

- Also means any flood-related damage sustained by a structure on two separate occasions during a 10-year period which costs of repairs at the time of each event on average equals or exceeds 25% of the market value of the structure before the damage occurred

Substantial Improvement means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any five-year period for which the cost equals or exceeds 50% of the market value of the structure before the start of construction of the improvement.

- Does not include any correction of existing violations of state or community health, sanitary, or safety code specifications that have been identified by community code enforcement officials and are necessary to assure safe living conditions.
- Does not include any alterations of historic structures, provided that the alteration will not preclude the structures continued designation as a historic structure and the alteration is approved by variance specified in the ordinance.

Corrective Procedures: For violations of applicable state or local laws, it is the Floodplain Administrators duty to notify the owner of the building about the violation and the occupant must immediately remedy the violations of law cited in the notification

- If the owner of a building or property fails to take prompt corrective actions, the floodplain administrator should issue the owner written notice by certified or registered mail
    - Hearing will be held at a designated place or time within 10 days after the date of notice and the owner is entitled to be heard in person or by counsel
    - Floodplain administrator may issue an order to vacate or demolish the building as applicable
- The owner is required to remedy the violation not less than 60 days but not more than 180 days. But, if the Floodplain Administrator finds imminent danger to life or property, he or she may order that corrective action in a shorter period where feasible
- Owners may appeal orders to take corrective actions to the Board of Adjustment by giving notice of appeal in writing to the Floodplain Administrator within 10 days of the final order being issued.
- Failure to comply with an order to take corrective action for which no appeal has been made or failure to comply with the order of the governing body following an appeal will result in the owner being guilty of a Class 1 misdemeanor pursuant to NC G.S. § 143-215.58 and shall be punished at the discretion of the court.

Penalties

- Violation of the provisions of the flood damage prevention ordinance or failure to comply with any of its requirements, including violation of conditions and safeguards established in connection with grants of variance or special exceptions, shall constitute a Class 1 misdemeanor pursuant to NC G.S. § 143-215.58. Any violations will be fined not more than $100 or imprisoned for not more than thirty days, or both.
- Each day a violation continues should be considered a separate event

6.3.4.4. Rowan County

Implementation and Enforcement Details: The Director of Planning and Development is the Floodplain Administrator for Rowan County and is responsible for:

- Reviewing all floodplain development applications, issuing permits for all proposed development, and reviewing all proposed development within the SFHAs to assure that all necessary local, state, and federal permits have been received.
- Notify adjacent communities and NCDPS, NCEM, and the state NFIP coordinator prior to alteration or relocation of watercourse
- Prevent encroachments into floodways and non-encroachment areas unless flood hazard reduction provisions are met
- Make onsite inspections of work in progress, issue stop work orders as required, revoke development permits as required, make periodic inspections throughout the SFHAs, follow corrective procedures, coordinate revisions to FIS/FIRMS, and maintain current map repository.

Regulations:

- All new construction and substantial improvement must be adequately anchored to prevent flotation, collapse, and lateral movement of the structure.
- All new construction and substantial improvements must be constructed with methods, equipment, and practices that minimize flood damage.
- All new heating, electrical, ventilation, plumbing, air conditioning, and other service equipment at or above the Regulatory Flood Protection Elevation (RFPE) and avoid water entering the components of the equipment.
- All new water supply systems, sanitary sewage systems, and on-site waste disposal systems should be designed to minimize or eliminate infiltration of floodwaters into the system.
- All development protocol should have public utilities and facilities such as sewer, gas, electrical, and water systems constructed to minimize flood damage.
- All subdivision developments and development proposals should have adequate drainage provided to reduce flood hazard exposure.
- Any structure partially located in the SFHA should meet all the requirements for new construction and substantial improvements.
- When a structure is in multiple flood hazard zones, the provisions for the more restrictive

flood hazard risk zone and the highest BFE should apply.
- Fill is prohibited in SFHAs including the construction of buildings on fill
- All development in the SFHA or Floodplain are required to follow the regulations specified in the Flood Damage Prevention Ordinance to obtain a floodplain development permit.

Substantial Damage means damage of any origin sustained by a structure during any 1-year period whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred.

Substantial Improvement means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any 1-year period for which the cost equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. Does not include
- Correct existing violations of state or community health, sanitary, or safety code specifications identified by community code enforcement officials and necessary to assure safe living conditions.
- Alterations of historic structures, provided that the alteration will not preclude the structures continued designation as a historic structure and the alteration is approved by variance specified in the ordinance.

Corrective Procedures
- When the floodplain administrator finds violations of applicable state and local laws, it is their duty to notify the owner or occupant of the building of the violation.
- If the owner of the building or property fails to take prompt action to correct the violation, the floodplain administrator shall give the owner written notices that the building or property is in violation of floodplain regulations and set a time and date for the hearing, the administrative hearing will be held no later than 10 days after the notice of the violation, and the floodplain administrator is able to issue an order to vacate, alter, or demolish the building as applicable.
- If the administrator should find that the building or development is in violation of the flood damage prevention ordinance, the owner must remedy the violation within a specific time period, not less than 60 days but no more than 180 days, but the floodplain administrator can make the corrective action due earlier than the specified range if it is determined that the violation is a danger to life or other property.
- Those who are in violation may appeal the decision to the board of adjustment by giving notice of the appeal in writing to the clerk to the board of adjustment within 30 days of receiving actual or constructive notice of the decision. Without an appeal, the floodplain administrators order shall be final.
- Failure to comply with an order for corrective action when no appeal is filed or if there is a failure to comply with the order of the board of adjustment following an appeal, the owner shall be guilty of a Class 1 misdemeanor and shall be punished at the discretion of the court.

Penalties
- Penalties for violations of the provisions of the flood damage prevention ordinance or failure

to comply with its requirements constitutes a Class 1 misdemeanor pursuant to North Carolina General Statutes (NCGS 143-215.58). Any person who violates this chapter or fails to comply with any of its requirements shall, upon conviction thereof, be fined not more than fifty dollars ($50.00) or imprisoned for not more than thirty (30) days, or both.

Table 6- 2 provides a summary of NFIP Claim and Policy Information.

*Table 6- 2: NFIP Policy and Claim Information[3][4]. *Includes Davidson and Kannapolis in total claims paid*

County	Jurisdiction	Reg-Emer Date	Current Effective FIRM Date	NFIP Policies in Force	Total Coverage	Total Written Premium + FPF	Total Annual Payment	Total Paid Claims	Total Claim Dollars paid*
Iredell	Iredell County	5/15/1980	11/16/2018	100	$31,477,000	$82,123	$102,382	36	$1,125,288.49
	Harmony	*Does not participate in NFIP*							
	Love Valley	*Does not participate in NFIP*							
	Mooresville	5/1/1980	6/16/2009	36	$11,783,000	$21,298	$27,305		
	Statesville	9/28/1979	6/16/2009	32	$10,435,000	$63,653	$78,789		
	Troutman	6/27/2013	6/16/2009	4	$1,917,000	$3,544	$4,698		
Rowan	Rowan County	11/1/1979	11/16/2018	54	$15,448,000	$62,009	$77,438	47	$1,144,961.43
	China Grove	12/21/78	06/16/09	--	--	--	--		
	Cleveland	01/19/10	06/16/09	1	$350,000	$771	$926		
	East Spencer	07/03/78	06/16/09	1	$250,000	$974	$1,391		
	Faith	11/26/2002	6/16/2009	1	$269,000	$501	$608		
	Granite Quarry	9/15/1978	6/16/2009	16	$3,784,000	$13,407	$16,536		
	Landis	7/3/1978	6/16/2009	2	$354,000	$2,602	$3,329		
	Rockwell	5/15/1978	6/16/2009	10	$2,086,000	$6,561	$8,134		
	Salisbury	5/15/1980	6/16/2009	196	$37,430,000	$177,045	$219,779		
	Spencer	9/29/1978	6/16/2009	9	$1,703,000	$7,673	$9,654		

[3] Federal Emergency Management Agency [FEMA] & National Flood Insurance Program [NFIP]. (n.d.). Historical NFIP Claims Information and Trends [Dataset]. In FEMA. FEMA. https://www.floodsmart.gov/historical-nfip-claims-information-and-trends?map=countries/us/us-nc-all®ion=us-nc&miny=all&maxy=all&county=>ype=state

[4] Federal Emergency Management Agency [FEMA]. (n.d.). OpenFEMA Data Sets [Dataset]. FEMA. https://www.fema.gov/about/openfema/data-sets

All jurisdictions listed above that are participants in the NFIP will continue to comply with all required provisions of the program and will work to adequately comply in the future utilizing several strategies. For example, the jurisdictions will coordinate with NCEM and FEMA to develop maps and regulations related to special flood hazard areas within their jurisdictional boundaries and, through a consistent monitoring process, will design and improve their floodplain management program in a way that reduces the risk of flooding to people and property.

The Towns of Harmony and Love Valley do not participate in the NFIP because neither jurisdiction has any of its land area in the floodplain.

Community Rating System: An additional indicator of floodplain management capability is the active participation of local jurisdictions in the Community Rating System (CRS). The CRS is an incentive-based program that encourages counties and municipalities to undertake defined flood mitigation activities that go beyond the minimum requirements of the NFIP by adding extra local measures to provide protection from flooding. All the 18 creditable CRS mitigation activities are assigned a range of point values. As points are accumulated and reach identified thresholds, communities can apply for an improved CRS class rating. Class ratings, which range from 10 to 1, are tied to flood insurance premium reductions as shown in Table 6- 3. As class rating improves (the lower the number the better), the percent reduction in flood insurance premiums for NFIP policyholders in that community increases.

Table 6- 3: CRS Ratings and premium reductions

CRS Class	Premium
1	45%
2	40%
3	35%
4	30%
5	25%
6	20%
7	15%
8	10%
9	5%
10	0

Community participation in the CRS is voluntary. Any community in full compliance with the rules and regulations of the NFIP may apply to FEMA for a CRS classification better than class 10. The CRS application process has been simplified over the past several years based on community comments. Changes were made with the intent to make the CRS more user-friendly and make extensive technical assistance available

for communities who request it.

- None of the jurisdictions currently participate in the CRS. Participation in the CRS program should be considered as a mitigation action by the counties and municipalities. The program would be most beneficial to the City of Salisbury, Iredell County, and Rowan County.

Flood Damage Prevention Ordinance: A flood damage prevention ordinance establishes minimum building standards in the floodplain to minimize public and private losses due to flood conditions.

- All communities participating in the NFIP are required to adopt a local flood damage prevention ordinance. All counties and municipalities participating in this hazard mitigation plan (except for the Town of Harmony and the Town of Love Valley) also participate in the NFIP and they have adopted flood damage prevention regulations.

Floodplain Management Plan: A floodplain management plan (or a flood mitigation plan) provides a framework for action regarding corrective and preventative measures to reduce flood-related impacts.

- None of the counties or municipalities participating in this plan has adopted a Floodplain Management Plan.

Open Space Management Plan*:* An open space management plan is designed to preserve, protect, and restore undeveloped lands in their natural state and to expand or connect areas in the public domain such as parks, greenways, and other outdoor recreation areas. In many instances, open space management practices are consistent with the goals of reducing hazard losses, such as the preservation of wetlands or other flood-prone areas in their natural state in perpetuity.

- Iredell County has a Comprehensive Recreation Master Plan which serves as an Open Space Management Plan. It has also been working actively to develop sections of the Carolina Thread Trail, which aims to weave communities together through an interconnected trail and greenway system that is funded by several resources. All the municipalities in Iredell County are involved in the trail system development.
- Rowan County has developed a Parks and Recreation 15 Year Master Plan, and the Town of Landis also has a Recreation Master Plan in place.

Stormwater Management Plan: A stormwater management plan is designed to address flooding associated with stormwater runoff. The stormwater management plan is typically focused on design and construction measures that are intended to reduce the impact of more frequently occurring minor urban flooding.

- Iredell County has provisions for stormwater management built into its Land Development Code under the Utilities Standards section. Similarly, Mooresville, Statesville, and Troutman include stormwater regulations in either their zoning ordinance or unified development ordinance.

- Rowan County does not have a stormwater management plan; however, several of its incorporated municipalities have stormwater regulations in place. The Towns of China Grove and Granite Quarry include stormwater management regulations in their respective Unified Development Ordinance, the City of Salisbury integrates stormwater management into its Land Development Code, and the Town of Landis has its own Stormwater Quality Management and Discharge Control Ordinance.

6.3.5. Administrative and Technical Capability

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Technical capability can be evaluated by assessing the level of knowledge and technical expertise of local government employees, such as personnel skilled in using Geographic Information Systems (GIS) to analyze and assess community hazard vulnerability. The Capability Assessment Survey was used to capture information on administrative and technical capability through the identification of available staff and personnel resources.

6.3.5.3. Updated Capabilities

Statesville

- **Information Collection and Updates:** The city continues to utilize the Iredell County information system that coordinates information on plans, development, roadways, and other information updates. The city continues to work with the County to maintain updates.

Table 6- 4 provides a summary of the capability assessment results for the Iredell Rowan Region regarding relevant staff and personnel resources. A check (✓) indicates the presence of a staff member(s) in that jurisdiction with the specified knowledge or skill.

Table 6- 4: Administrative and Technical Resources

Jurisdiction	Planners With Knowledge of Land Development and Land Management Practices	Engineers or Professionals Trained in Construction Practices Related to Buildings and or Infrastructure	Planners or Engineers with an Understanding of Natural and/or Human-caused Hazards	Building Official	Emergency Manager	Floodplain Manager	Land Surveyor	Scientists Familiar with the Hazards of the Community	Staff With the Education or Expertise to Assess the Community's Vulnerability to	Personnel Skilled in GIS and or HAZUS	Resources Development Staff or Grant Writers	Maintenance Programs to Reduce Risk	Warning Systems and Services
Iredell County	✓	✓	-	✓	✓	✓	-	-	✓	✓	-	✓	✓
Harmony	✓	✓	✓	-	✓	-	-	✓	✓	-	-	-	-
Mooresville	✓	✓	✓	✓	✓	-	-	-	-	✓	✓	✓	✓
Statesville	✓	✓	✓	-	-	✓	-	-	-	✓	✓	✓	✓
Troutman	✓	✓	-	-	✓	✓	-	✓	✓	✓	✓	-	-
Love Valley	-	✓	-	-	✓	-	-	✓	✓	-	-	-	-
Rowan County	✓	✓	-	✓	✓	✓	-	-	✓	✓	✓	-	✓

Jurisdiction	Planners With Knowledge of Land Development and Land Management Practices	Engineers or Professionals Trained in Construction Practices Related to Buildings and or Infrastructure	Planners or Engineers with an Understanding of Natural and/or Human-caused Hazards	Building Official	Emergency Manager	Floodplain Manager	Land Surveyor	Scientists Familiar with the Hazards of the Community	Staff With the Education or Expertise to Assess the Community's Vulnerability to	Personnel Skilled in GIS and or HAZUS	Resources Development Staff or Grant Writers	Maintenance Programs to Reduce Risk	Warning Systems and Services
China Grove	✓	-	✓	-	-	-	-	-	-	✓	✓	-	-
Cleveland	-	✓	✓	-	-	-	-	-	-	✓	-	✓	✓
East Spencer	-	-	-	-	-	-	-	-	-	-	✓	-	✓
Faith	✓	✓	-	✓	✓	✓	-	-	-	✓	-	-	✓
Granite Quarry	✓	✓	-	✓	✓	✓	-	-	✓	✓	✓	-	✓
Landis	✓	✓	-	✓	✓	-	-	-	✓	-	-	-	✓
Rockwell	✓	-	-	✓	✓	✓	-	-	-	-	-	-	-

Jurisdiction	Planners With Knowledge of Land Development and Land Management Practices	Engineers or Professionals Trained in Construction Practices Related to Buildings and or Infrastructure	Planners or Engineers with an Understanding of Natural and/or Human-caused Hazards	Building Official	Emergency Manager	Floodplain Manager	Land Surveyor	Scientists Familiar with the Hazards of the Community	Staff With the Education or Expertise to Assess the Community's Vulnerability to	Personnel Skilled in GIS and or HAZUS	Resources Development Staff or Grant Writers	Maintenance Programs to Reduce Risk	Warning Systems and Services
Salisbury	✓	✓	✓	✓	✓	✓	-	-	-	✓	✓	✓	✓
Spencer	✓	-	✓	-	✓	-	-	-	-	✓	✓	-	✓

Credit for having a floodplain manager was given to those jurisdictions that have a flood damage prevention ordinance, and therefore an appointed floodplain administrator, regardless of whether the appointee was dedicated solely to floodplain management. Credit was given for having a scientist familiar with the hazards of the community if a jurisdiction has a Cooperative Extension Service or Soil and Water Conservation Department. Credit was also given for having staff with education or expertise to assess the community's vulnerability to hazards if a staff member from the jurisdiction was a participant on the existing hazard mitigation plan's planning committee.

6.3.6. Fiscal Capability

The ability of a local government to act is often associated with the amount of money available to implement policies and projects. This may take the form of outside grant funding awards or locally- based revenue and financing. The costs associated with mitigation policy and project implementation vary widely. In some cases, policies are tied primarily to staff time or administrative costs associated with the creation and monitoring of a given program. In other cases, direct expenses are linked to an actual project, such as the acquisition of flood-prone homes, which can require a substantial commitment from local, state, and federal funding sources.

The Capability Assessment Survey was used to capture information on the region's fiscal capability through the identification of locally available financial resources.

6.3.6.3. Updated Capabilities

Iredell County

- **Funding Allocation**: the County continues to allocate funding when funding becomes available, but the County continues to look for a consistent mitigation funding source.

Table 6- 5 provides a summary of the results for the Iredell Rowan Region regarding relevant fiscal resources. A Check (✓) indicates that the given fiscal resource is locally available for hazard mitigation purposes (including match funds for state and federal mitigation grant funds) according to the previous county hazard mitigation plans.

Table 6- 5: *Relevant Fiscal Resources*

Jurisdiction	Capital Improvement Programming	Community Development Block Grants (CDBG)	Special Purpose Taxes	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation Bonds	Revenue Bonds	Special Tax Bonds	Others
Iredell County	✓	–	–	–	–	–	–	✓	–	–	–
Harmony	–	✓	–	–	–	–	–	–	–	–	–
Love Valley	–	✓	–	–	–	–	–	–	–	–	–
Mooresville	✓	✓	✓	–	✓	✓	–	✓	✓	–	–
Statesville	✓	✓	–	✓	✓	✓	–	–	–	–	–
Troutman	✓	✓	–	–	–	–	–	–	–	–	–
Rowan County	–	✓	–	–	–	–	–	–	–	–	–
China Grove	✓	✓	–	–	–	–	–	✓	–	–	–
Cleveland	✓	–	–	–	✓	–	–	✓	–	–	–
East Spencer	✓	✓	–	–	✓	–	–	–	–	–	–
Faith	–	✓	–	–	–	–	–	–	–	–	–
Granite Quarry	–	–	–	–	–	–	–	–	–	–	–
Landis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–
Rockwell	✓	–	–	–	–	–	–	–	–	–	–

Jurisdiction	Capital Improvement Programming	Community Development Block Grants (CDBG)	Special Purpose Taxes	Gas/Electric Utility Fees	Water/Sewer Fees	Stormwater Utility Fees	Development Impact Fees	General Obligation Bonds	Revenue Bonds	Special Tax Bonds	Others
Salisbury	–	✓	✓	–	✓	✓	–	–	–	–	–
Spencer	–	✓	–	–	–	–	–	–	–	–	–

6.3.7. Political Capability

One of the most difficult capabilities to evaluate involves the political will of a jurisdiction to enact meaningful policies and projects designed to reduce the impact of future hazard events. Hazard mitigation may not be a local priority or may conflict with or be an impediment to other goals of the community, such as growth and economic development. Therefore, the local political climate must be considered in designing mitigation strategies as it could be the most difficult hurdle to overcome in accomplishing their adoption and implementation.

The Capability Assessment Survey was used to capture information on political capability of the Iredell Rowan Region. Previous hazard mitigation plan was reviewed for general examples of local political capability, such as guiding development away from identified hazard areas, restricting public investments or capital improvements within hazard areas, or enforcing local development standards that go beyond minimum state or federal requirements (i.e., building codes, floodplain management, etc.).

- The previous hazard mitigation plans identified existing ordinances that address natural hazards or are related to hazard mitigation such as emergency management, flood damage prevention, watershed protection, zoning, and subdivision.
- Iredell County feels it has strong measures in place to help mitigate hazards. Many of these measures are found in local ordinances, especially regarding flood mitigation. The county's participation in the NFIP (along with several municipalities) indicates at least some support for mitigation activities.
- Rowan County participates in the NFIP and has adopted the required Flood Damage Prevention Ordinance and a Sedimentation and Erosion Control Ordinance. However, many of the actions laid out in the plan have tested the limits of fiscal and political willingness to implement the activities.

Table 6- 6: Political capabilities in the planning area. Not all jurisdictions provided details about their political capabilities, so only the jurisdictions that responded to the prompt were included.

Jurisdiction	Details (if Applicable)
Iredell County	Elected officials are aware of hazard mitigation efforts and have been supportive in the past when applying for grants and providing matching resources when necessary.
Mooresville	The planning department along with BoC develop plans for development including flood plans etc.
Spencer	Member of regional organizations like Centralina Regional Council and Regional Stormwater Partnership of the Carolinas. The Town's elected officials are committed to a mission and set of values that overlap with hazard mitigation in several areas: https://spencernc.gov/town-government-and-services/

Jurisdiction	Details (if Applicable)
Statesville	Jurisdiction adopted a Stormwater Utility Fee for Stormwater Program to use towards permit compliance and maintenance of infrastructure. Aware of impacts of increased development. Responsive to being pr-active at reducing development in hazardous flood prone areas.

6.3.8. Education and Outreach

This capability refers to the education and outreach programs that are already in place that can be used to implement mitigation activities and communicate information related to natural hazards. Examples of natural disaster or safety programs in schools, participation in Firewise or Storm ready, and activities conducted for hazard awareness campaigns.

6.3.8.3. Updated Capabilities

Iredell County

- **Public Information and Awareness:** the County participates in numerous public education campaigns to reach residents through social media and reverse 911 platforms to educate residents about natural hazard preparedness.
- **Harmony, Love Valley, Mooresville, and Statesville:** The municipalities continue to participate in public education and awareness campaigns regarding natural hazards through social media and reverse 911 platforms.

Rowan County

- **Public Information and Awareness:** the County participates in numerous public education campaigns to reach residents through social media and reverse 911 platforms to educate residents about natural hazard preparedness.
- **China Grove:** The Town continues to participate in public education and awareness campaigns regarding natural hazards through social media and reverse 911 platforms.
- **East Spencer:** The Town had developed a monthly newsletter to all residents to inform them of issues, activities, and general information within the community. This includes education from Town social media platforms to communicate with residents, which includes natural hazard information.
- **Faith:** The Town continues to participate in public education and awareness campaigns regarding natural hazards through social media, print, internet, and reverse 911 platforms.
- **Granite Quarry:** The Town continues to participate in public education and awareness campaigns regarding natural hazards through social media, print, internet, and reverse 911 platforms.

Table 6- 7 provides a summary of the capability assessment results for the Iredell Rowan Region regarding education and outreach capabilities. A check (✓) indicates the presence of that education or outreach resource and a (--) indicates the lack of that resource in that jurisdiction.

Table 6- 7: Education and Outreach Capabilities

Jurisdiction	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc.	Ongoing public education or information program (E.g. responsible water use, fire safety, household preparedness, environmental education	Natural disaster or safety related school programs	StormReady Certification	Firewise Communities Certification	Public-Private Partnership Initiatives Addressing Disaster-related Issues
Iredell County	✓	✓	✓	✓	–	✓
Love Valley	–	–	–	–	–	–
Mooresville	–	✓	✓	–	–	–
Statesville	✓	✓	–	–	–	–
Troutman	–	–	–	–	–	–
Rowan County	✓	✓	✓	✓	–	✓
China Grove	–	✓	–	–	–	–
Cleveland	–	–	–	–	–	–
East Spencer	✓	✓	✓	✓	–	
Faith	–	✓	✓	–	–	–
Granite Quarry	✓	✓	✓	✓	–	✓
Landis	✓	✓	✓	✓	–	✓

Jurisdiction	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access, and functional needs populations, etc.	Ongoing public education or information program (E.g. responsible water use, fire safety, household preparedness, environmental education	Natural disaster or safety related school programs	StormReady Certification	Firewise Communities Certification	Public-Private Partnership Initiatives Addressing Disaster-related Issues
Rockwell	–	✓	–	–	–	–
Salisbury	✓	✓	–	–	–	–
Spencer	–	✓	✓	–	✓	–

6.3.9. Mitigation Capability

This capability refers to the mitigation strategies and actions developed by the communities in this plan. Table 6- 8 provides a summary of the capability assessment results for the Iredell Rowan Region regarding mitigation capabilities. A check (✓) indicates the presence of that mitigation capability in the jurisdiction, and a (--) indicates that they either did not respond that they had that capability or that they lack that capability.

Table 6- 8: Mitigation Capability Summary

Jurisdiction	Did you apply for mitigation grant funding?	Do you perform reconstruction projects?	Do you perform building evaluations?	Do you perform acquisitions?
Iredell County	✓	✓	✓	--
Harmony	--	--	--	--
Love Valley	--	--	--	--
Mooresville	--	--	--	--
Statesville	--	✓	--	--
Troutman	--	--	--	--
Rowan County	--	--	--	--
China Grove	--	--	--	--
Cleveland	--	--	--	--
East Spencer	--	--	--	--
Faith	--	--	--	--
Granite Quarry	--	--	--	--
Landis	--	--	--	--
Rockwell	--	✓	--	--
Salisbury	--	--	--	--
Spencer	--	--	--	--

6.4. Conclusions on Local Capability

The overall capability to implement hazard mitigation actions varies among the participating

Jurisdictions. The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. While identifying specific mitigation actions to pursue, the Planning Team considered each jurisdiction's hazard risk level and their existing capability to minimize or eliminate that risk. The counties and all jurisdictions specifically identified types of personnel and staff that may be needed to expand on implementing mitigation activities more fully in their communities; these include engineers, planners, GIS analysts, building officials, land surveyors, and scientists. They will consider employing more staff and/or providing additional training opportunities with these specific skillsets to further improve and expand capabilities within the all the participating jurisdictions. These capabilities were developed by each jurisdiction to identify their overall capabilities in each category listed in Table 6- 9. This capability summary is filled out by each jurisdiction, and jurisdictions who chose to not assign a capability score or did not provide a capability score for some or all categories are indicated with a " – " in Table 6- 9.

Table 6- 9: Local capability conclusion summary

Jurisdiction	Plans, ordinances, codes, and programs	Administrative and Technical Capability	Fiscal Capability	Education and Outreach Capability	Mitigation Capability	Political Capability	Overall Capability
Iredell County	High	High	High	High	Moderate	Moderate	Moderate
Harmony	–	–	–	–	–	–	–
Love Valley	–	–	–	–	–	–	–
Mooresville	High	High	High	Medium	Medium/ High	Medium	Medium/ High
Troutman	–	–	–	–	–	–	–
Statesville	Moderate	High	–	Moderate	Limited	Limited	Limited
Mooresville	High	High	High	Medium	Medium/ High	Medium	Medium/ High
Rowan County	Limited	High	Moderate	Moderate	Moderate	Moderate	Moderate
China Grove	Limited	Limited	Limited	Limited	Limited	Moderate	Limited
Cleveland	Limited	High	Moderate	Moderate	Moderate	Moderate	Moderate
East Spencer	Limited	High	Moderate	Moderate	Moderate	Moderate	Moderate

Jurisdiction	Plans, ordinances, codes, and programs	Administrative and Technical Capability	Fiscal Capability	Education and Outreach Capability	Mitigation Capability	Political Capability	Overall Capability
Faith	Limited	Moderate	Moderate	Limited	Moderate	Moderate	Moderate
Granite Quarry	Limited	High	Moderate	Moderate	Moderate	Moderate	Moderate
Landis	Limited	High	Limited	Moderate	Moderate	Limited	Moderate
Rockwell	Limited	Limited	Moderate	Unrated	Unrated	Unrated	Limited
Salisbury	-	-	-	-	-	-	-
Spencer	Moderate	Limited	Limited	Limited	Limited	Moderate	Limited

As previously discussed, one of the reasons for conducting a Capability Assessment is to examine local capabilities to detect any existing gaps or weaknesses within ongoing government activities that could hinder proposed mitigation activities and exacerbate community hazard vulnerability. These gaps or weaknesses have been identified for each jurisdiction in the tables found throughout this section. The participating jurisdictions used the Capability Assessment as part of the basis for the Mitigation Actions that are identified in Section 8; therefore, each jurisdiction addresses their ability to expand on and improve their existing capabilities through the identification of their Mitigation Actions.

6.4.4. Linking the Capability Assessment with the Risk Assessment and the Mitigation Strategy

The conclusions of the Risk Assessment and Capability Assessment serve as the foundation for the development of a meaningful hazard mitigation strategy. During the process of identifying specific mitigation actions to pursue, the Regional Hazard Mitigation Planning Committee considered not only each jurisdiction's level of hazard risk, but also their existing capability to minimize or eliminate that risk.

SECTION 7: MITIGATION STRATEGY

This section of the Plan provides the blueprint for the participating jurisdictions in the Iredell Rowan Region to become less vulnerable to its identified hazards. It is based on the consensus of the Regional Hazard Mitigation Planning Committee and the findings and conclusions of the *Capability Assessment* and *Risk Assessment*. It consists of the following five subsections:

7.1. INTRODUCTION
7.2. MITIGATION GOALS
7.3. IDENTIFICATION AND ANALYSIS OF MITIGATION TECHNIQUES
7.4. SELECTION OF MITIGATION TECHNIQUES FOR THE IREDELL ROWAN REGION
7.5. PLAN UPDATE REQUIREMENT

7.1. Introduction

The intent of the Mitigation Strategy is to provide the participating jurisdictions with the goals that will serve as guiding principles for future mitigation policy and project administration, along with an analysis of mitigation techniques available to meet those goals and reduce the impact of identified hazards. It is designed to be comprehensive, strategic, and functional in nature:

- In being *comprehensive*, the development of the strategy includes a thorough review of all hazards and identifies extensive mitigation measures intended to not only reduce the future impacts of high-risk hazards, but also to help the region achieve compatible economic, environmental, and social goals.
- In being *strategic*, the development of the strategy ensures that all policies and projects proposed for implementation are consistent with pre-identified, long-term planning goals.
- In being *functional,* each proposed mitigation action is linked to established priorities and assigned to specific departments or individuals responsible for their implementation with target completion deadlines. When necessary, funding sources are identified that can be used to assist in project implementation.

The first step in designing the Mitigation Strategy includes the identification of mitigation goals. Mitigation goals represent broad statements achieved through implementing more specific mitigation actions. These actions include both hazard mitigation policies (such as the regulation of land in known hazard areas through a local ordinance) and hazard mitigation projects that seek to address specifically targeted hazard risks (such as the acquisition and relocation of a repetitive loss structure).

The second step involves the identification, consideration, and analysis of available mitigation measures to help achieve the identified mitigation goals. This is a long-term, continuous process sustained through the development and maintenance of this Plan. Alternative mitigation measures will continue to be considered as future mitigation opportunities are identified, as data and technology improve, as mitigation funding becomes available, and as this Plan is maintained over time.

The third and last step in designing the Mitigation Strategy is the selection and prioritization of specific mitigation actions for the Iredell Rowan Region (provided separately in Section 8: *Mitigation Action Plan*). Each county and participating jurisdiction has its own Mitigation Action Plan (MAP) that reflects the needs and concerns of that jurisdiction. The MAP represents an unambiguous and functional plan for action and is the most essential outcome of the mitigation planning process.

The MAP includes a prioritized listing of proposed hazard mitigation actions (policies and projects) for the Iredell and Rowan counties and the jurisdictions to complete. Each action has accompanying information, such as those departments or individuals assigned responsibility for implementation, potential funding sources, and an estimated target date for completion. The MAP provides those departments or individuals responsible for implementing mitigation actions with a clear roadmap that also serves as an important tool for monitoring success or progress over time. The cohesive collection of actions listed in the MAP can also serve as an easily understood menu of mitigation policies and projects for those local decision makers who want to quickly review the recommendations and proposed actions of the Regional Hazard Mitigation Plan.

In preparing each Mitigation Action Plan for the region, officials considered the overall hazard risk and capability to mitigate the effects of hazards as recorded through the risk and capability assessment process, in addition to meeting the adopted mitigation goals and unique needs of the community.

7.1.1. Mitigation Action Prioritization

The Regional HMPC members were tasked with establishing a priority for each action. Priorities have not changed since the plan was previously approved. The plan reflects current conditions, including financial, legal, and political realities as well as post-disaster conditions. Various discussions and planning level assessments of whether the costs were reasonable compared to the probable benefits of actions were discussed based on experience and judgement of the planning Committee. Benefits include losses avoided, such as the number and value of structures and infrastructure protected by the action and the population protected from injury and loss of life. Qualitative benefits, such as quality of life and natural and beneficial functions of ecosystems were also considered. Prioritization of the proposed mitigation actions was based on the following six factors:

- Effect on overall risk to life and property
- Ease of implementation
- Political and community support
- General cost/benefit review
- Funding availability
- Continued compliance with the NFIP

The point of contact for each county helped coordinate the prioritization process by reviewing each action and working with the lead agency/department responsible to determine a priority for each action using the six factors listed above. Using these criteria, actions were classified as high, moderate, or

low priority by the participating jurisdiction officials. Only a general cost/benefit review was considered by the Regional Hazard Mitigation Planning Committee through selecting and prioritizing mitigation actions.

High priority actions are highly cost-effective, administratively feasible and politically feasible strategies that could be implemented in 2 fiscal years and be continued. Moderate priority actions have strategies that have at least two of the following characteristics (but not all three) and could be implemented in 3 fiscal years: Highly cost-effective; or administratively feasible, given current levels of staffing and resources; or are politically popular and supportable given the current environment. Low priority actions are characterized by strategies that have one of the following characteristics and could be implemented in the next five years): Highly cost-effective; or administratively feasible, given current levels of staffing and resources; or are politically popular and supportable given the current environment. A more detailed cost/benefit analysis will be applied to projects prior to the application for or obligation of funding, as appropriate.

7.2. Mitigation Goals

The primary goal of all local governments is to promote the public health, safety, and welfare of its citizens. In keeping with this standard, Iredell and Rowan counties and the participating municipalities have developed goal statements for local hazard mitigation planning in the region. In developing these goals, the previous hazard mitigation plan was reviewed to determine areas of consistency with the hazards identified in the plan. The proposed goals were presented, reviewed, voted on, and accepted by the Planning Committee at their first and second meetings. Each goal, purposefully broad in nature, establishes parameters used in developing more mitigation actions. The Iredell Rowan Regional Mitigation Goals are presented in Table 7- 1**.** Consistent implementation of actions over time will ensure that community goals are achieved.

Table 7- 1: *Iredell Rowan Regional Mitigation Goals*

Goal #1	Provide for and implement real time monitoring of mitigation activities.
Goal #2	Develop and institute systems and procedures for information collection, interpretation, and dissemination.
Goal #3	Develop uniform guidelines and training for responders, managers, and other professionals/decisions-makers.
Goal #4	Develop effective public education and awareness programs.
Goal #5	Implement loss reduction measures and mitigation actions.
Goal #6	Coordinate hazard mitigation activities with emergency preparedness, response, and recovery guidelines and efforts.
Goal #7	Reduce the number of deaths, injuries, and economic losses caused by natural and human- caused hazards
Goal #8	Develop an understanding of the risks posed by natural and human caused hazards and evaluate those risks through the delineation of susceptible areas and estimation of potential losses.

7.3. Identification and Analysis of Mitigation Techniques

In formulating the Mitigation Strategy for the Iredell Rowan Region, a wide range of activities were considered to help achieve the established mitigation goals, in addition to addressing any specific hazard concerns. The state hazard mitigation plan was referenced to consider state funding sources and priorities for mitigation. FEMA publications and web-based resources were also considered to help identify mitigation actions. FEMA's website includes a Mitigation Best Practices Portfolio with mitigation success stories and case studies from communities across the country. Also, the resource guide from *FEMA Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* lists potential mitigation actions by hazard type. These activities were discussed during the Regional Hazard Mitigation Planning Committee meetings. In general, all activities considered by the Planning Committee can be classified under one of the following six broad categories of mitigation techniques: Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, and Public Awareness and Education. These are discussed in detail below.

7.3.1. Prevention

Preventative activities are intended to keep hazard problems from getting worse and are typically administered through government programs or regulatory actions that influence the way land is developed, and buildings are built. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred, or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance

- Capital improvements programming
- Riverine / fault zone setbacks

7.3.2. Property Protection

Property protection measures involve modifying existing buildings and structures to help them better withstand hazard forces or removal of structures from hazardous locations. Examples include:

- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting (e.g., wind proofing, floodproofing, seismic design techniques, etc.)
- Safe rooms, shutters, shatter-resistant glass
- Insurance

7.3.3. Natural Resource Protection

Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes. Parks, recreation, or conservation agencies and organizations often implement these protective measures. Examples include:

- Floodplain protection
- Watershed management
- Riparian buffers
- Forest and vegetation management (e.g., fire resistant landscaping, fuel breaks, etc.)
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

7.3.4. Structural Projects

Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction. They are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Dams / levees / dikes / floodwalls
- Diversions / detention / retention
- Channel modification
- Storm sewers

7.3.5. Emergency Services

Although not typically considered a "mitigation" technique, emergency service measures do minimize the impact of a hazard event on people and property. These commonly are actions taken immediately prior to, during, or in response to a hazard event. Examples include:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

7.3.6. Public Education and Awareness

Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property. Examples of measures to educate and inform the public include:

- Outreach projects
- Speaker series / demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School educational programs
- Hazard expositions

7.4. Selection of Mitigation Techniques for the Iredell Rowan Region

To determine the most appropriate mitigation techniques for the communities in the Iredell Rowan Region, the Regional Hazard Mitigation Planning Committee members thoroughly reviewed and considered the findings of the *Capability Assessment* and *Risk Assessment* to determine the best activities for their respective communities. Other considerations included the effect of each mitigation action on overall risk to life and property, its ease of implementation, its degree of political and community support,

its general cost-effectiveness, and funding availability (if necessary).

7.5. Plan Update Requirement

In keeping with FEMA requirements for plan updates, the Mitigation Actions identified in the previous plan were evaluated to determine their current implementation status. The status of hazard mitigation actions from the previous plan have been identified as being completed, deleted, in progress or to be continued. For actions that have not been completed, the actions describe that it will be included as part of the updated action plan. Updates on the implementation status of each action are provided. The mitigation actions provided in Section 8: *Mitigation Action Plan* include the mitigation actions from the previous plans as well as any new mitigation actions proposed through the current planning process.

SECTION 8: MITIGATION ACTION PLAN

This section includes the listing of the mitigation actions proposed by the participating jurisdictions in the Iredell Rowan Region. It consists of the following two subsections:

8.1. OVERVIEW
8.2. IREDELL COUNTY
8.3. ROWAN COUNTY

44 CFR Requirement
44 CFR Part 201.6(c)(3)(iii): The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.

8.1. Overview

As described in the previous section, the Mitigation Action Plan, or MAP, provides a functional plan of actions for each jurisdiction. It is designed to achieve the mitigation goals established in Section 7: *Mitigation Strategy* and will be maintained on a regular basis according to the plan maintenance procedures established in Section 9: *Plan Maintenance*.

Each proposed mitigation action has been identified as an effective measure (policy or project) to reduce hazard risk for the Iredell Rowan Region. Each action is listed in the MAP in conjunction with background information such as hazard(s) addressed, relative priority, and estimated cost. Other information provided in the MAP includes potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding).

Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out as well as a timeframe for its completion. These implementation mechanisms ensure that the Regional Hazard Mitigation Plan remains a functional document that can be monitored for progress over time. The proposed actions are not listed in priority order, though each has been assigned a priority level of “high,” “moderate,” or “low” as described below and in Section 7 (page 7-2).

The Mitigation Action Plan is organized by mitigation strategy category (Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, or Public Education and Awareness). The following are the key elements described in the Mitigation Action Plan:

Table 8- 1: Definitions of mitigation action plan update details

Category	Definition	
Hazards	Hazard which the action addresses.	
Relative Priority	**High**	Highly cost-effective, administratively feasible and politically feasible strategies that could be implemented in 2 fiscal years and be continued.
	Medium	Strategies that have at least two of the following characteristics (but not all three) and could be implemented in 3 fiscal years: Highly cost-effective; or administratively feasible, given current levels of staffing and resources; or are politically popular and supportable given the current environment.
	Low	Strategies that have one of the following characteristics and could be implemented in the next five years): Highly cost-effective; or administratively feasible, given current levels of staffing and resources; or are politically popular and supportable given the current environment.
Action Type	**Prevention**	Preventative activities are intended to keep hazard problems from getting worse and are typically administered through government programs or regulatory actions that influence the way land is developed, and buildings are built.
	Property Protection	Property protection measures involve the modification of existing buildings and structures to help them better withstand the forces of a hazard, or removal of the structures from hazardous locations.
	Natural Resource Protection	Natural resource protection activities reduce the impact of natural hazards by preserving or restoring natural areas and their protective functions. Such areas include floodplains, wetlands, steep slopes, and sand dunes.
	Structural Projects	Structural mitigation projects are intended to lessen the impact of a hazard by modifying the environmental natural progression of the hazard event through construction.
	Public Education	Public education and awareness activities are used to advise residents, elected officials, business owners, potential property buyers, and visitors about hazards, hazardous areas, and mitigation techniques they can use to protect themselves and their property.
	Emergency Services	Although not typically considered a “mitigation” technique, emergency service measures do minimize the impact of a hazard event on people and property.

Category	Definition	
Action Status	**To Be Continued:**	Continuing action or program; requires annual or periodic maintenance to continue the action.
	Complete:	No further action required for mitigation action to be implemented or used.
	In Progress:	Action is currently being implemented.
	Deferred:	Action will be reevaluated later.
	Deleted:	The Jurisdiction will no longer utilize the action as a viable mitigation action that can be implemented.
	New	The mitigation action has just been added to the HMP.
Estimated Cost	**Low**	> $10,000
	Moderate	$10,000 -$50,000
	High	<$50,000
Potential Funding Sources	Local, State, or Federal sources such as grant funds or general operating budgets are noted here, where applicable.	
Responsible Party	Department responsible for undertaking the action.	
Time frame	**Short-Term**	1-2 years
	Medium-Term	3-5 years
	Long-Term	greater than 5 years

8.2. Iredell County

Table 8- 2: Iredell County mitigation actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Iredell County Office of Emergency Management (OEM)	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the county has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will need to update the system.	Medium-Term	In Progress
All	High	Emergency Services	Low	Local Budget or Grants	Iredell County OEM	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision-making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	As of 2024, the county and municipalities have worked together to develop guidelines for hazard mitigation that integrate with planning and zoning at the local level. These guidelines account for growth projections, so as new data is developed, this will need to be re- evaluated going forward.	Medium-Term	In Progress
All	High	Emergency Services	Moderate	Local Budget or Grants	Iredell County OEM	Critical Infrastructure: To place, where feasible, generators at critical facilities to mitigate against impacts from disasters.	As of 2024, the county has identified the need for generators at critical facilities such as solid waste transfer station scale locations and intends to apply for hazard mitigation grants to close this gap.	Medium-Term	In Progress
All	High	Emergency Services	Low	Local Budget or Grants	Iredell County OEM/Management Information Systems	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	As of 2024, the county has worked to integrate all phases of emergency management together into a single plan. While it has succeeded in integrating many phases, there is still some work to be carried out to complete this action. For example, the county would like to further incorporate its mitigation plan into its Horizon 2040 Plan.	Medium-Term	In Progress

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	Moderate	Prevention	Low	Local Budget or Grants	Iredell County OEM	Implementation of Loss Reduction Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard mitigation goals, objectives, or recommendations.	As of 2024, the county has worked with the municipalities over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve a more sustainable approach in the coming years.	Medium-Term	In Progress
All	High	Public Education and Awareness	Low	Local Budget or Grants	Iredell County OEM	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county participates in several public education campaigns that reach most residents within the municipalities as well as the unincorporated areas through social media and reverse 911 platforms. Will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued
Flood, Dam and Levee Failure	High	Prevention	High	Local Budget or Grants	Iredell County OEM	Dam Safety Improvement: Develop a comprehensive plan to obtain funding to improve dam safety and to repair, rehabilitate, or otherwise improve the condition of high hazard dams to reduce the likelihood of dam failure events, loss of life, and loss of property.	New Action	Medium-Term	New Action

8.2.1. Town of Harmony

Table 8- 3: Town of Harmony Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Town Clerk	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the town has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will need to update the system.	Medium-Term	To Be Continued
All	High	Emergency Services	High	Local Budget or Grants	Town Elected Officials, Iredell County OEM/Management Information Systems	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision- making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	As of 2024, the town and the county have worked together to develop guidelines for hazard mitigation that integrate with planning and zoning at the local level. These guidelines account for growth projections, so as new data is developed, this will need to be re- evaluated as needed going forward.	Medium-Term	To Be Continued
All	High	Emergency Services	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	The county has worked with the town to integrate all phases of emergency management together into a single plan. While it has succeeded in integrating many phases, there is still some work to be carried out to complete this action. For example, the county would like to further incorporate its mitigation plan into its Horizon Plan. This will continue and will be reviewed annually.	Medium-Term	To Be Continued
All	Moderate	Prevention	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Implementation of Loss Reduction Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard	As of 2024, the town has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						mitigation goals, objectives, or recommendations.	times when project opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve a more sustainable approach in the coming years. This will be reviewed annually or as needed.		
All	High	Public Education and Awareness	High	Local Budget or Grants	Town Elected Officials, Iredell Hazard OEM	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The town participates in several public education campaigns that reach most residents within the jurisdiction through social media and reverse 911 platforms. Will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued

8.2.2. Town of Love Valley

Table 8- 4: Town of Love Valley Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the town has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will need to update the system.	Medium-Term	To Be Continued
All	High	Emergency Services	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision-making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	As of 2024, the town and the county have worked together to develop guidelines for hazard mitigation that integrate with planning and zoning at the local level. These guidelines account for growth projections, so as new data is developed, this will need to be re- evaluated as needed going forward.	Medium-Term	To Be Continued
All	High	Emergency Services	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	As of 2024, the town has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The town will work to achieve a more sustainable approach in the coming years. This will be reviewed annually or as needed.	Medium-Term	To Be Continued
All	Moderate	Prevention	Low	Local	Town Elected	Implementation of Loss Reduction	As of 2024, the town has worked with the	Medium-	To Be

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
				Budget or Grants	Officials, Iredell County OEM	Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard mitigation goals, objectives, or recommendations.	county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the county and town joined together with the State to update the Regional Hazard Mitigation Plan. The town will work to achieve a more sustainable approach in the coming years. This will be reviewed annually or as needed.	Term	Continued
All	High	Public Education and Awareness	Low	Local Budget or Grants	Town Elected Officials	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The town participates in several public education campaigns that reach many residents within the jurisdiction through social media and reverse 911 platforms. Will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued

8.2.3. Town of Mooresville

Table 8- 5: Town of Mooresville Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Prevention	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision-making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	As of 2024, the town and the county have worked together to develop guidelines for hazard mitigation that integrate with planning and zoning at the local level. These guidelines account for growth projections, so as new data is developed, this will need to be re- evaluated annually.	Medium-Term	To Be Continued
All	High	Prevention	High	Local Budget or Grants	Town Elected Officials, Iredell County OEM/Management Information Systems	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the town has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will update the system as needed.	Medium-Term	To Be Continued
All	High	Prevention	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	As of 2024, the county has worked to integrate all phases of emergency management together into a single plan. While it has succeeded in integrating many phases, there is still some work to be carried out to complete this action. For example, the county would like to further incorporate its mitigation plan into its Horizon Plan.	Short-term	In Progress
All	Moderate	Prevention	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Implementation of Loss Reduction Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard mitigation goals, objectives, or	As of 2024, the town has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						recommendations.	opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve a more sustainable approach in the coming years during annual reviews,		
All	High	Public Education and Awareness	Low	Local Budget or Grants	Town Elected Officials	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The town participates in several public education campaigns that reach many residents within the jurisdiction through social media and reverse 911 platforms. This will be reviewed and completed annually.	Medium-Term	To Be Continued

8.2.4. City of Statesville

Table 8- 6: City of Statesville Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	Low	Local Budget or Grants	City Elected Officials, Iredell County OEM	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision-making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	As of 2024, the city and the county have worked together to develop guidelines for hazard mitigation that integrate with planning and zoning at the local level. These guidelines account for growth projections, so as new data is developed, this will need to be re- evaluated going forward annually.	Medium-Term	To Be Continued
All	High	Emergency Services	Low	Local Budget or Grants	City Elected Officials, Iredell County OEM	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	As of 2024, the city has worked to integrate all phases of emergency management together into a single plan. While it has succeeded in integrating many phases, there is still some work to be carried out to complete this action; reviewed annually.	Medium-Term	To Be Continued
All	High	Emergency Services	High	Local Budget or Grants	Iredell County OEM	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the City has utilized the County's system that coordinates information on plans, development, roadways, and other information. As information continues to change, the city will need to update and review the system with the county annually.	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	City Elected Officials, Iredell County OEM	Guidelines and Training: Establish, where feasible, joint city and county guidelines for hazard mitigation implementation and to use all available information in the decision-making process that is likely to effect within a five (5) year period, based on growth projections. This includes planning and zoning authority that is currently exercised by either the municipality or the county.	Redundant		Deleted
All	Moderate	Prevention	Low	Local Budget or Grants	City Elected Officials, Iredell County OEM	Implementation of Loss Reduction Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard mitigation goals, objectives, or recommendations.	As of 2024, the city has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the city and the county joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve a more sustainable approach in the coming years and will be evaluated annually.	Medium-Term	To Be Continued
Flood	High	Prevention	High	Local Budget or Grants	City of Statesville Stormwater Division	Culvert Improvements to prevent Flooding of roads which can result in loss of services and access for residents and emergency services.	Several culvert replacements are in the design stage and the City is seeking grant funding through the Goldenleaf Foundation and BRIC to help fund construction costs of these projects. The City will be performing an asset inventory to identify other vulnerable locations to target for design and replacement in the future.	Long-term	New Action
All	High	Public	High	Local	City Elected Officials	Public Education and Awareness:	Redundant		Deleted

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
		Education and Awareness		Budget or Grants		To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.			
All	High	Public Education and Awareness	Low	Local Budget or Grants	City Elected Officials	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The city participates in several public education campaigns that reach most residents within the City's Jurisdiction through social media, websites and reverse 911 platforms. This will continue and will occur annually.	Medium-Term	To Be Continued

8.2.5. Town of Troutman

Table 8- 7: Town of Troutman Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Town Elected Officials, Iredell County OEM/Management Information Systems	Information Collection, Interpretation, and Dissemination: Utilize technology to accomplish an automated system to coordinate plans information, development information, road expansion information and other demographics.	As of 2024, the town has utilized technology to develop an automated system that coordinates information on plans, development, roadways, and other information. As information continues to change, the county will need to update the system.	Medium-Term	To Be Continued
All	High	Emergency Services	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Real-time Monitoring: Consolidate documents into a single, seamless, integrated plan that incorporates all phases of a comprehensive emergency management program.	As of 2024, the town has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve a more sustainable approach in the coming years. This will be reviewed annually or as needed.	Medium-Term	To Be Continued
All	Moderate	Prevention	Low	Local Budget or Grants	Town Elected Officials, Iredell County OEM	Implementation of Loss Reduction Measures: To establish, where feasible, joint city and county mitigation funding sources and establish joint searches for opportunities to implement hazard mitigation goals, objectives, or recommendations	As of 2024, the town has worked with the county over the past several years to establish a consistent funding source for mitigation. Although it has not been able to establish an annually recurring source, it has been able to jointly allocate funding at times when project opportunities have become available. For example, during the update of this plan, the county and municipalities joined together with the State to update the Regional Hazard Mitigation Plan. The jurisdictions will work to achieve	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
							a more sustainable approach in the coming years. This will be reviewed annually or as needed.		

8.3. Rowan County

Table 8- 8: Rowan County Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
Flood	Moderate	Prevention	Moderate	Local Budget or Grants	Rowan Emergency Management (EM), NCEM	Placement of additional stream gauges throughout the county at creek and tributary locations prone to flooding, resulting in inaccessibility, property damage, or potential life safety concerns.	Begin collection of supporting documentation to determine needed locations with NWS-GSP and State Emergency Management. Once these have been established, we will work to determine budgetary options.	Long-term	New Action
Flood	Moderate	Property Protection	High	Local Budget or Grants	NCDOT, Elected Officials	Seek assistance from NCDOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways.	The focus for this mitigation period will be on two locations in which we have known flooding issues that continuously result in water rescues, even following barrier placement. Those two locations are Old Mocksville Rd. and Hollywood Drive. The County will continue to seek assistance from NCDOT and other agencies, and this action will be reviewed as needed.	Medium-Term	To Be Continued
All	High	Prevention	Low	Local Budget or Grants	Rowan County EM, Local Emergency Planning Committee (LEPC), Elected Officials	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	As of 2024, discussion about Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning will continue with both county municipalities and county government continue, with a focus on mitigation strategies within planning and zoning. Additional efforts were made this year by way of LEPC Bylaw rewrites	Short-term	In Progress

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
							including ensuring that planning and zoning have adequate representation within the LEPC.		
All	Moderate	Property Protection	Moderate	Local Budget or Grants	Rowan County, EM, County Building Inspections and Codes Enforcement, Elected Officials	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	The county continues to establish additional structural and fixture integrity by 25% for protection from all hazards, and at a minimum, the County aims to survey these facilities. This action remains a goal with beginning steps of identification of facilities and will be reevaluated and will be addressed when possible.	Medium-Term	To Be Continued
All	High	Emergency Services	High	Local Budget or Grants	Rowan County EM, Fire Departments Rescue Squads	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	Rowan County Emergency Services has worked to establish a specialized taskforce that focuses on technical rescues, including technical rescue, water rescue, Search and Rescue (SAR), and HazMat. Administrative policy was put into place in 2024 with Standard Operating Guidelines (SOGs) being developed. This action is 50% complete and will be reevaluated as needed.	Short-term	In Progress
All	High	Public Education and Awareness	Low	Local Budget or Grants	LEPC	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and municipalities have reached out to the public via several channels including in-person, print media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	NCEM, Rowan County EM, LEPC, Elected Officials, Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable	The county aims to continue establishing the retrofit, relocation, or purchase of habitable structures in the 100-year floodplain. This action remains a goal and action item, with a focus on key locations within both the county and municipalities. Funding remains an	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	issue, however, research into funding sources such as grants has begun. This action will be reviewed when funding becomes available.		
Flood, Dam and Levee Failure	High	Prevention	High	Local Budget or Grants	Rowan County EM, NCEM	Dam Safety Improvement: Develop a comprehensive plan to obtain funding to improve dam safety and to repair, rehabilitate, or otherwise improve the condition of high hazard dams to reduce the likelihood of dam failure events, loss of life, and loss of property.	New Action	Long-term	New Action

8.3.1. Town of China Grove

Table 8- 9: Town of China Grove Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	China Grove Police and Fire	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	The town added three full-time firefighters in 2023 increasing the number of full-time fire positions by 46%.	N/A	Complete
All	High	Prevention	Low	Local Budget or Grants	Town Manager	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	This action was unfunded over the past 10 years. However, Town officials attempted to implement and discuss with local entities and governments to identify various mitigation strategies. This action will be pursued going forward. Discussion and planning continue with local entities and governments; given the recent events with various storms, new needs have become known, and this is a priority action	Short-term	In Progress
Tornado, Hurricane and Tropical Storm, Severe Thunderstorm	High	Prevention	Low	Local Budget or Grants	NCDOT, Duke Energy, Energy United, Town Manager's Office, Elected Officials	Trim trees from rights-of-way and remove dead, dying and or overhanging limbs over power lines.	The town maintain areas within our municipal street system as identified on our annually approved Powell Bill Map.	Medium-Term	To Be Continued
Flood	Moderate	Property Protection	Low	Local Budget or Grants	NCDOT, Town Manager's Office, Elected Officials	Upgrade, modify curbing and gutters along Main Street to handle additional water flow from resurfacing.	The town is in the process of modifying curbing and gutters along Main Street to handle additional waterflow from resurfacing. Planning is underway, and nature-based pre-construction engineering and project development is currently underway to request funding.	Short-term	In Progress
All	Moderate	Property Protection	Moderate	Local Budget or Grants	County Building Inspections	To establish, where feasible, additional structural and fixture integrity by 25% for	The town continues to establish additional structural and fixture integrity by 25% for protection from	Medium-Term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
					and Codes Enforcement, Elected Officials	protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	all hazards, and at a minimum, the County aims to survey these facilities. This action remains a goal with beginning steps of identification of facilities and will be reevaluated and will be addressed when possible. This action remains a goal with beginning steps of identification of facilities.		
Flood	High	Property Protection	Moderate	Local Budget or Grants	NCEM, Rowan County EM LEPC, Elected Officials, Executives, Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	The town aims to continue establishing the retrofit, relocation, or purchase of habitable structures in the 100-year floodplain. This action remains a goal and action item, with a focus on key locations within both the county and municipalities. Funding remains an issue, however, research into funding sources such as grants has begun. This action will be reviewed when funding becomes available.	Medium-Term	To Be Continued
Flood	Moderate	Property Protection	High	Local Budget or Grants	NCDOT, Elected Officials	Seek assistance from NCDOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways	The town continues to work to improve drainage on tributaries and low-lying flood prone areas that cross roadways. The NCDOT has begun to identify areas of improvement, but significant work needs to continue in the future.	Medium-Term	To Be Continued
All	High	Public Education and Awareness	Low	Local Budget or Grants	Rowan County EM	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and municipalities have reached out to the public via several channels including in-person, print media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued

8.3.2. Town of Cleveland

Table 8- 10: Town of Cleveland Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Fire Depts. and Rescue Squads	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	Over the last 5-year mitigation period, Local Fire Departments and Rescue have added peak time paid staffing to the volunteer workforce. The plan is to continue this trend to combat lack of volunteers. This will be reevaluated annually.	Medium-Term	To Be Continued
Flood	Moderate	Structural Project	Moderate	Local Budget or Grants	NC Department of Natural and Cultural Resources (NCDNR), Elected Officials, Town Board of Commissioners	Upgrade, modify wastewater facility to mitigate potential wastewater loss from flooding.	The town has been in active pursuit of funding to upgrade infrastructure projects, especially when they involve critical facilities such as wastewater. The town will continue to pursue funding from state and local sources to complete this project and other similar projects.	Short-term	In Progress
All	High	Public Education and Awareness	Low	Local Budget or Grants	Elected Officials, Town Board of Commissioners	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and municipalities have reached out to the public via several channels including in-person, print media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years.	Medium-Term	To Be Continued
Flood	Moderate	Property Protection	High	Local Budget or Grants	NCDOT, Elected Officials	Seek assistance from NCDOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways.	Some work by NCDOT accomplished across county to identify and improve stream flow in vicinity of roadway bridges as part of bridge replacement projects, but significant work remains to be done over the next several years.	Short-term	In Progress
All	High	Prevention	Low	Local Budget or Grants	Town Clerk	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies. For example, mitigation planning and strategies were discussed at LEPC meetings when these were held, and	Short-term	In Progress

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
							floodplain mapping was utilized in infrastructure planning. However, additional integration should take place going forward. Discussion and planning continue with local entities and governments; given the recent events with various storms, new needs have become known and this a priority action.		
All	Moderate	Property Protection	Moderate	Local Budget or Grants	County Building Inspections and Codes Enforcement/ Town Elected Officials	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	Up through 2024, the county has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is deferred due to lack of funding and will need to be addressed in the next HMP cycle.	Long-term	Deferred
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials and Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	Up through 2024, the county has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is deferred due to lack of funding and will need to be addressed in the next HMP cycle.	Long-term	Deferred

8.3.3. Town of East Spencer

Table 8- 11: Town of East Spencer Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	Moderate	Local Budget or Grants	East Spencer Fire Dept.	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	The council has approved the development of a full-time fire department. This will include hiring 6 personnel.	Short-term	In Progress
Tornado, Hurricane and Tropical Storm, Severe Thunderstorm	High	Prevention	Low	Local Budget or Grants	NCDOT, Town Fire Department Duke Energy, Energy United, Town Elected Officials	Trim trees from rights-of-way and remove dead, dying and or overhanging limbs over power lines, some power poles close to streets that present concerns for safety.	Town Streets department has carried out this program over the past several years and will continue to do so going forward as needed.	Medium-term	To Be Continued
All	High	Prevention	Low	Local Budget or Grants	Town Clerk	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies. For example, mitigation planning and strategies were discussed at LEPC meetings when these were held, and floodplain mapping was utilized in infrastructure planning. However, additional integration should take place going forward.	Medium-term	To Be Continued
All	Moderate	Property Protection	Moderate	Local Budget or Grants	County Building Inspections and Codes Enforcement, Town Elected Officials	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare	This action is deferred due to lack of funding.	Long-term	Deferred

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						reports and recommendations to local officials.			
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials, Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	The town has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is not complete due to lack of funding and will need to be continued in the next cycle.	Short-term	In Progress
All	High	Public Education and Awareness	Low	Local Budget or Grants	East Spencer Fire Dept., Rowan County EM	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The town has developed a monthly newsletter that is sent to all residents informing them of issues, activities, and general information within the community. Additionally, the town uses other social media platforms to communicate with residents. This occurs annually.	Medium-term	To Be Continued

8.3.4. Town of Faith

Table 8- 12: Town of Faith Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	Moderate	Local Budget or Grants	Faith Fire Dept.	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	Peak time paid emergency response personnel have been added Monday to Friday.	N/A	Complete
All	High	Prevention	Low	Local Budget or Grants	Faith Fire Dept.	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies has occurred. For example, mitigation planning and strategies were discussed at LEPC meetings when these were held, and floodplain mapping was utilized in infrastructure planning. However, additional integration should take place going forward and will be addressed when possible or annually.	Medium-term	To Be Continued
All	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials, County Building Inspections and Codes Enforcement	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	The town continues to update the critical facilities database and plans to develop a formalized process to review which facilities are considered critical facilities. It is expected that the town will develop a process in the next mitigation period.	Medium-term	To Be Continued
All	High	Public Education and	Low	Local Budget or Grants	Faith Fire Dept.	Public Education and Awareness: To establish, where feasible, joint city and	The county and municipalities have reached out to the public via several channels including in-person, print	Medium-term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
		Awareness				county public education materials and public education public for hazard mitigation implementation.	media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years.		
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials, County Building Inspections and Codes Enforcement, Town Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	The county and town have attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is not complete due to lack of funding and will need to be continued in the next cycle. This is 80% complete.	Medium-term	To Be Continued

8.3.5. Town of Granite Quarry

Table 8- 13: Town of Granite Quarry Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Granite Quarry Police and Fire Depts.	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	The Granite Quarry Fire Department has up to 9 full time firefighters, 3 full time firefighters 24/7 and an additional part time job on the weekends. The FD has zero vacancies. Police Department (PD) has 10 full-time positions and 2 are currently vacant. As the town grows, an additional 2 officers and 2nd fire station will be needed. FD has become medium rescue certified by state standards and added a complement of tools to assist when extreme dangers arise. 75% complete.	Short-term	In Progress
All	Moderate	Property Protection	Police and Fire "	Local Budget or Grants	Town Elected Officials, County Building Inspections and Codes Enforcement	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	Work continues with a feasibility study performed by Duke Energy. A downtown master plan has been adopted, and the next step will be survey and design. Plan to develop a formalized process to review which facilities are considered critical facilities. Expect to develop process in next mitigation period	Medium-term	To Be Continued
All	High	Prevention	Moderate	Local Budget or Grants	Town Clerk	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	Work continues in coordination with Rowan County to integrate hazard mitigation planning and strategies into new development, commercial districts, infrastructure, and land use planning.	Medium-term	To Be Continued
All	High	Public Education and Awareness	Low	Local Budget or Grants	Granite Quarry Police and Fire Depts.	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation	A new town social media page, ring community app, updated website functions continue to help educate the public and public education events. This action is 75% complete.	Short-term	In Progress

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						implementation.			
Flood	Moderate	Property Protection	Low	Local Budget or Grants	Town Elected Officials, County Building Inspections and Codes Enforcement, Town Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	Work continues to identify properties and carry out mitigation through planning and development as funds allow. The county has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is not complete due to lack of funding and will need to be reevaluated in the next cycle.	Long-term	Deferred

8.3.6. Town of Landis

Table 8- 14: Town of Landis Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Landis Police and Fire	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped and prepared to respond to a variety of emergency and disaster situations.	The Town of Landis is currently staffed in Police and Fire at their maximum capacity of 12 full-time Police Officers trained in hazard response, and 10 full time Firemen who are trained in hazard response. These positions are fully funded through the current town budget, and Town Officials will ensure future personnel expansion needs of departments are met and funded.	N/A	Complete
All	High	Prevention	High	Local Budget or Grants	Town of Landis	The current electric substation is older, and is prone to risk in weather events, such as Tornados, and Hurricanes. This electric substation runs all electric power for the Town of Landis, and part of the power for the City of Kannapolis.	The Town is currently in the process of adding an additional electric substation for redundancy in case of a storm event, such as a Tornado or Hurricane. This will run all electric power for the Town of Landis and part of the City of Kannapolis.	Short-term	New Action
All	High	Prevention	Low	Local Budget or Grants	Town Manager	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies is ongoing. For example, mitigation planning and strategies were discussed at LEPC meetings when these were held, and floodplain mapping was utilized in infrastructure planning. However, additional integration should take place going forward. This will be reviewed annually.	Medium-term	To Be Continued
Flood	High	Prevention	High	Local Budget or Grants	Town Of Landis	The current sanitary sewer lift stations are being rehabbed to assist with raw sewage spillage during a Tornado,	The Town is currently using State American Rescue Plan Act (ARPA) Funds to rehab the	Long-term	New Action

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						Hurricane, or large rain event.	sanitary sewer Lift Stations in the community to assist with spillage during flood or extreme rainfall.		
All	Moderate	Property Protection	Moderate	Local Budget or Grants	County Risk Management /County Building Inspections and Codes Enforcement/ Elected Officials and Executives	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the Division of Emergency Management that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	The Town aims to continue the update of critical facilities database. The Town plans to develop a formalized process to review which facilities are considered critical facilities. This process is expected to be finalized by the next HMP review period.	Medium-term	To Be Continued
Flood	Moderate	Property Protection	High	Local Budget or Grants	NCDOT/ County Risk Management /Elected Officials and Executives	Seek assistance from NC DOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways.	Some work by NCDOT accomplished across county to identify and improve stream flow in vicinity of roadway bridges as part of bridge replacement projects, but significant work remains to be done over the next several years.	Medium-term	To Be Continued
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	NCEM/EMD /County Risk Management /LEPC/ Hazard Mitigation Task Force/ Elected Officials /Executives/ Engineers	To establish, where feasible, the retrofit, relocation or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine impact upon local populations.	Up through 2024, the county has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is deferred due to lack of funding and will need to be addressed in the next HMP cycle.	Long-term	Deferred
Dam and Levee Failure	High	Property Protection	High	Local Budget or Grants	Town of Landis	Lake Landis Dam, Lake Corriher Dam, and Lake Wright Dams are in need of repair. The Town of Landis is seeking grant opportunities, and other funding sources, to repair these dams from potential flooding of the	The Town has actively pursued and received $300,000 NC Streamflow Rehabilitation Assistance Program (NCSTRAP) funding for the Landis Dam. The Town will still need to allocate $4	Long-term	New Action

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						China Grove area.	million dollars for the full project across all three dams. The status of this action will be reevaluated during the next HMP update.		
All	High	Public Education and Awareness	Low	Local Budget or Grants	Hazard Mitigation Task Force	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and municipalities have reached out to the public via several channels including in-person, print media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years. This will be reviewed and conducted annually.	Medium-term	To Be Continued

8.3.7. Town of Rockwell

Table 8- 15: Town of Rockwell Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Local Fire Department	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped and prepared to respond to a variety of emergency and disaster situations.	Working on adding two additional full-time spots to emergency response forces that are trained to respond to a variety of emergency and disaster situations. This will be updated as necessary.	Short-term	In Progress
All	High	Prevention	Low	Local Budget or Grants	Town Clerk	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure and land use planning.	As of 2024, discussion about Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure and land use planning will continue with both county municipalities and county government continue, with a focus on mitigation strategies within planning and zoning. Additional efforts were made this year by way of LEPC Bylaw rewrites including ensuring that planning and zoning have adequate representation within the LEPC. This will be addressed regularly during planning and zoning meetings.	Short-term	In Progress
Flood	Moderate	Property Protection	High	Local Budget or Grants	NCDOT/ County Risk Management /Elected Officials and Executives	Repair or retrofit storm drains along Market Street to provide storm water runoff. Specific portions of Market Street often have low lying flood issues during and immediately after heavy rains. This problem is attributed to a faulty design and inappropriate capacity of the storm drains that were installed by a private contractor.	Some work by NCDOT accomplished across county to identify and improve stream flow in vicinity of roadway bridges as part of bridge replacement projects, but significant work remains to be done over the next several years. The Town plans on presenting progress shortly.	Medium-term	To Be Continued
All	Moderate	Property Protection	Moderate	Local Budget or Grants	County Risk Management /County Building Inspections and Codes Enforcement/	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the	The Town continues to establish additional structural and fixture integrity by 25% for protection from all hazards, and at a minimum, the County aims to survey these facilities. This action remains a goal with beginning steps of identification of facilities and will be	Medium-term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
					Elected Officials and Executives	Division of Emergency Management that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	reevaluated and will be addressed when possible. This action remains a goal with beginning steps of identification of facilities.		
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	NCEM/EMD /County Risk Management /LEPC/ Hazard Mitigation Task Force/ Elected Officials/ Executives/ Engineers	To establish, where feasible, the retrofit, relocation or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine impact upon local populations.	The Town aims to continue establishing the retrofit, relocation, or purchase of habitable structures in the 100-year floodplain. This action remains a goal and action item, with a focus on key locations within both the county and municipalities. Funding remains an issue, however, research into funding sources such as grants has begun. This will be updated Annually	Medium-term	To Be Continued
All	High	Public Education and Awareness	Low	Local Budget or Grants	Hazard Mitigation Task Force	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and municipalities have reached out to the public via several channels including in- person, print media, and the Internet. All jurisdictions will continue to work to educate the public in new ways over the next several years.	Medium-term	To Be Continued

8.3.8. City of Salisbury

Table 8- 16: City of Salisbury Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Public Education and Awareness	High	Local Budget or Grants	Salisbury Police	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	The county and city have reached out to the public via several channels including in-person, print media, and the Internet. The city will continue to work to educate the public in new ways over the next several years.	Medium-term	To Be Continued
Flood	Moderate	Property Protection	High	Local Budget or Grants	City Elected Officials, NCDOT	Seek assistance from NCDOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways.	Some work by NCDOT accomplished across county to identify and improve stream flow in vicinity of roadway bridges as part of bridge replacement projects, but significant work remains to be done over the next several years. The bridge replacement project is ongoing. Lack of funding has caused a delay in completing it and significant work will continue over the next several years.	Short-term	In Progress
All	Moderate	Property Protection	Moderate	Local Budget or Grants	City Elected Officials, County Building Inspections and Codes Enforcement	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural engineers employed by the Division of Emergency Management that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	The city is updating the critical facilities database and developing a formalized process. Development will continue and will be reviewed in the next mitigation period. This action is 30% complete.	Short-term	In Progress
All	High	Prevention	Low	Local Budget or Grants	City Elected Officials, County Building Inspections and Codes Enforcement	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies is occurring regularly. Discussion of mitigation planning and strategies occurred at various meetings over the past few years. Floodplain mapping continues to be	Short-term	In Progress

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
							utilized with any infrastructure planning. Additional integration should take place going forward as funding becomes available.		
All	High	Public Education and Awareness	Low	Local Budget or Grants	Salisbury Police	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	The county and city have reached out to the public via several channels including in-person, print media, and the Internet. The city will continue to work to educate the public in new ways over the next several years.	Medium-term	To Be Continued
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	City Elected Officials, County Building Inspections and Codes Enforcement, City Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine impact upon local populations.	This action is in progress as attempts to identify applicable properties continue and mitigate through planning and development. It will need to be continued through the next cycle as funding is lacking and additional sources need to be identified.	Short-term	In Progress

8.3.9. Town of Spencer

Table 8- 17: Town of Spencer Mitigation Actions

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
All	High	Emergency Services	High	Local Budget or Grants	Spencer Police and Fire Depts.	To establish, where feasible, additional emergency response forces, by at least 10%, that are trained, equipped, and prepared to respond to a variety of emergency and disaster situations.	Fire Department is up to 9 full-time and 11 part-time employees, Police Department is up to 18 full-time employees and 5 part-time employees; currently there are openings for 1 full-time employee in each department and in January there will be a new position added to Police Department.	Medium-term	To Be Continued
All	High	Prevention	Low	Local Budget or Grants	Town Manager	Integration of a cooperative hazard mitigation program into new development, commercial districts, infrastructure, and land use planning.	Implementation and discussion with local entities and governments related planning to various mitigation strategies. For example, mitigation planning and strategies were discussed at LEPC meetings when these were held, and floodplain mapping was utilized in infrastructure planning. However, additional integration should take place going forward. Discussion and planning continue with local entities and governments; given the recent events with various storms, new needs have become known and this a priority action	Short-term	In Progress
Flood	Moderate	Property Protection	High	Local Budget or Grants	Town Elected Officials, NCDOT	Seek assistance from NCDOT and other agencies to improve drainage on tributaries and low-lying flood prone areas that cross roadways.	NCDOT continues to work across the town to identify and improve stream flow near roadway bridges as part of a bridge replacement project. This will be addressed as needed or annually.	Short-term	In Progress
All	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials, County Building Inspections and Codes	To establish, where feasible, additional structural and fixture integrity by 25% for protection from all hazards. At a minimum, all critical facilities should be surveyed by earthquake planners and structural	The new town hall and police station are planned to have an emergency generator, the fire station has an emergency generator, and this has increased communication between departments and training for hazard	Medium-term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
					Enforcement	engineers employed by the State that are trained, equipped and knowledgeable to prepare reports and recommendations to local officials.	mitigation.		
Flood	Moderate	Natural Resource Protection	High	Local Budget or Grants	Town Elected Officials, City of Salisbury, Catawba College	Creating nature-based solutions to maximize public use and recreational opportunities of properties in flood-prone areas.	The town has been in active pursuit of funding and planning to build a greenway connection along Grants Creek towards Salisbury in partnership with the City of Salisbury, Catawba College, and other partners.	Medium-term	To Be Continued
Flood	Moderate	Property Protection	Moderate	Local Budget or Grants	Town Elected Officials and Engineers	To establish, where feasible, the retrofit, relocation, or purchase of habitable structures in the 100-year (1%) floodplain. To plan for the retrofit, relocation, or purchase of habitable structures at the rate of 5% per annum until the project is complete. This project should not begin until new floodplain maps are generated by the state and accurate analysis of the new maps is made to determine the impact upon local populations.	The Town has attempted to identify applicable properties and carry out mitigation through planning and development when possible. This action is not complete due to lack of funding and will need to be continued in the next cycle. Continued management (through Rowan County) of construction in designated floodplain.	Short-term	In Progress
All	High	Public Education and Awareness	Low	Local Budget or Grants	Spencer Police and Fire Depts.	Public Education and Awareness: To establish, where feasible, joint city and county public education materials and public education public for hazard mitigation implementation.	Fire Department and Police Department visit North Rowan Elementary, Middle, and High Schools to talk to the children about various safety issues; FD also has a way for organizations to request they come and educate people, and they have events throughout the year such as the Justin E. Munroe Fire Camp and Open House for children and adults to come learn about fire safety.	Short-term	In Progress
Flood, Dam and Levee Failure	Moderate	Structural Project	High	Local Budget or Grants	Town Manager and Elected Officials, NCDNR, NCDOT	Retrofit or elevate the bridges on 3rd and 7th Streets and dredge or otherwise clear the channel of Grants creek tributaries near 17th Street to provide better storm water	Woody debris has been cleared from Grants Creek and its tributaries; the 17th Street Stormwater Project is in progress and awaiting permits/funding, the	Medium-term	To Be Continued

Hazards Addressed	Relative Priority	Action Type	Estimated Cost	Funding Sources	Responsible Party	Description	Status Description	Time Frame	Action Status
						runoff. Bridges on 3rd and 7th are often covered by storm water during or immediately after heavy rains and portions of 17th Street are subject to low flooding during and immediately after prolonged heavy rains.	Chicken Springs Dam work is also awaiting permits from the Army Corps of Engineers; the sink hole on 2nd Street caused by old terracotta stormwater pipes will soon be repaired; funding is still needed to continue improvements. This will be reevaluated as funding is obtained.		
Flood, Dam and Levee Failure	High	Structural	High	Local Budget or Grants	Town Elected Officials, NCDEQ,	Develop and implement plans to rehabilitate or remove Chicken Springs Dam (ROWAN-074), which is currently the only dam in Rowan County rated "unsatisfactory." The Town is working to address a notice of deficiency for this dam that was historically private, but part of a large area donated to the Town for the Fred and Alice Stanback Educational Forest and Nature preserve. A portion of the dam and pond remain privately owned and the Town believes acquiring the remaining property would be a helpful step. Taking these steps to improve dam safety and to repair, rehabilitate, or otherwise improve the condition of this high hazard dam would reduce the likelihood of dam failure events, loss of life, and loss of property.	New Action	Long-term	New Action

SECTION 9: PLAN MAINTENANCE

This section discusses how the Iredell Rowan Regional Mitigation Strategy and Mitigation Action Plan will be implemented and how the Regional Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public will continue to be involved in a sustained hazard mitigation planning process. It consists of the following four subsections:

9.1. MONITORING, EVALUATING AND UPDATING THE PREVIOUS PLAN
9.2. IMPLEMENTATION AND INTEGRATION
9.3. MONITORING, EVALUATION, AND ENHANCEMENT
9.4. CONTINUED PUBLIC INVOLVEMENT

44 CFR Requirement
44 CFR Part 201.6(c)(4)(i): The plan shall include a plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating and updating the mitigation plan within a five-year cycle.
44 CFR Part 201.6(c)(4)(ii): The plan maintenance process shall include a discussion on how the community will continue public participation in the plan maintenance process.

9.1. Monitoring, Evaluating and Updating the Previous Plan

Since the previous plan was adopted, each jurisdiction has worked to ensure that Plan was integrated into local activities and that the Plan was appropriately implemented. Each of the jurisdictions outlined a process in the previous mitigation plan for monitoring, evaluating and updating the plan throughout the interim period between plan updates.

Each jurisdiction was successful in implementing the monitoring, evaluation and updating processes that were outlined in previous plan as jurisdictions held annual meetings to discuss the mitigation plan and the priorities that were outlined and tracked in it. The specific process is outlined below with an explanation of how the monitoring, evaluating, and updating process was and will be carried out as well as any changes that were identified by the jurisdictions that would be useful to implement during the next update.

9.2. Implementation and Integration

Each agency, department, or other partner participating under the Iredell Rowan Regional Hazard Mitigation Plan is responsible for implementing specific mitigation

actions as prescribed in the Mitigation Action Plan. Every proposed action listed in the Mitigation Action Plan is assigned to a specific “lead” agency or department to assign responsibility and accountability and increase the likelihood of subsequent implementation.

In addition to the assignment of a local lead department or agency, an implementation time or a specific implementation date has been assigned to assess whether actions are being implemented in a timely fashion. The jurisdictions in the region will seek outside funding sources to implement mitigation projects in both the pre-disaster and post-disaster environments. When applicable, potential funding sources have been identified for proposed actions listed in the Mitigation Action Plan

The participating jurisdictions will integrate this Hazard Mitigation Plan into relevant city and county government decision-making processes or mechanisms, where feasible. This includes integrating the requirements of the Hazard Mitigation Plan into other local planning documents, processes, or mechanisms, such as comprehensive or capital improvement plans, when appropriate. The members of the Regional Hazard Mitigation Planning Committee will remain charged with ensuring that the goals and mitigation actions of new and updated local planning documents for their agencies or departments are consistent, or do not conflict with, the goals and actions of the Hazard Mitigation Plan, and will not contribute to increased hazard vulnerability in the region.

Since the previous plan was adopted, each County and participating jurisdiction have worked to integrate the hazard mitigation plan into other planning mechanisms where applicable/feasible. Examples of how this integration has occurred have been documented in the Implementation Status discussion provided for each of the mitigation actions found in Section 8. Specific examples of how integration has occurred include:

- Integrating the mitigation plan into reviews and updates of floodplain management ordinances.
- Integrating the mitigation plan into reviews and updates of County emergency operations plans.
- Integrating the mitigation plan into review and updates of building codes; and
- Integrating the mitigation plan into the capital improvements plan through identification of mitigation actions that require local funding.

Opportunities to further integrate the requirements of this Plan into other local planning mechanisms shall continue to be identified through future meetings of the Regional Hazard Mitigation Planning Committee, individual county meetings, staff meetings and the annual review process described herein. Although it is recognized that there are many benefits to integrating components of this Plan into other local planning mechanisms, the development and maintenance of this stand-alone Regional Hazard Mitigation Plan is deemed by the Regional Hazard Mitigation Planning Committee to be the most effective and appropriate method to implement

local hazard mitigation actions currently.

9.3. Monitoring, Evaluation, and Enhancement

Periodic revisions and updates of the Regional Hazard Mitigation Plan are required to ensure that the goals of the Plan are kept current, considering potential changes in hazard vulnerability and mitigation priorities. In addition, revisions may be necessary to ensure that the Plan is in full compliance with applicable federal and state regulations. Periodic monitoring, evaluation and update of the Plan will also ensure that specific mitigation actions are being reviewed and carried out according to the Mitigation Action Plan.

When determined necessary, the Regional Hazard Mitigation Planning Committee shall meet in March of every year to monitor, evaluate, and update the progress attained and to revise, where needed, the activities set forth in the Plan. The Regional Hazard Mitigation Planning Committee will track the implementation of the Plan through an informal mitigation action progress report as well as assess the effectiveness of the Plan at achieving its stated purpose and goals through evaluating what percentage of actions were implemented between the 5-year update cycle. The findings and recommendations of the Regional Hazard Mitigation Planning Committee shall be documented in the form of a report that can be shared with interested City and County Council members. The Regional Hazard Mitigation Planning Committee will also meet following any disaster events warranting a reexamination of the mitigation actions being implemented or proposed for future implementation. This will ensure that the Plan is continuously updated to reflect changing conditions and needs within the Region, becoming part of the regular administrative function of the offices or positions to which it is assigned. The Iredell County Emergency Management Coordinator and Rowan County Emergency Services Director will be responsible for reconvening the Regional Hazard Mitigation Planning Committee for these monitoring and evaluation reviews.

9.3.1. Five Year Plan Review

The Plan will be thoroughly reviewed by the Regional Hazard Mitigation Planning Committee every five years to determine whether there have been any significant changes in the region that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, an increase or decrease in capability to address hazards, and changes to federal or state legislation are examples of factors that may affect the necessary content of the Plan.

The Plan review provides county and municipal officials with an opportunity to evaluate those actions that have been successful and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. The Iredell County Emergency Management Coordinator and Rowan County Emergency Services Director will be

responsible for reconvening the Regional Hazard Mitigation Planning Committee and conducting the five-year review.

During the five-year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risks changed?
- Are the current resources appropriate for implementing the Plan?
- Are there implementation problems, such as technical, political, legal or coordination issues with other agencies?
- Have the outcomes occurred as expected?
- Did County departments participate in the plan implementation process as assigned?

Following the five-year review, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined herein. Upon completion of the review and update/amendment process, the Iredell Rowan Region Hazard Mitigation Plan will be submitted to the State Hazard Mitigation Officer at the North Carolina Division of Emergency Management (NCEM) for final review and approval in coordination with the Federal Emergency Management Agency (FEMA).

Because the plan update process can take several months to complete, and because Federal funding may be needed to update the plan, it is recommended that the five-year review process begin at the beginning of the third year after the plan was last approved. This will allow the participants in the Iredell Rowan Regional Hazard Mitigation Plan to organize to seek Federal funding if necessary and complete required plan update documentation before the plan expires at the end of the fifth year.

9.3.2. Disaster Declaration

Following a disaster declaration, the Iredell Rowan Regional Hazard Mitigation Plan will be revised as necessary to reflect lessons learned, or to address specific issues and circumstances arising from the event. It will be the responsibility of the Iredell County Emergency Management Coordinator and Rowan County Emergency Services Director to reconvene the Regional Hazard Mitigation Planning Committee and ensure the appropriate stakeholders are invited to participate in the plan revision and update process following declared disaster events.

9.3.3. Reporting Procedures

The results of the five-year review will be summarized by the Regional Hazard Mitigation Planning Committee in a report that will include an evaluation of the Plan's effectiveness and any required or recommended changes or amendments. The report will also include an evaluation of implementation progress for each of the proposed

mitigation actions, identifying reasons for delays or obstacles to their completion along with recommended strategies to overcome them.

9.3.4. Plan Amendment Process

Upon the initiation of the amendment process, representatives from Iredell and Rowan counties will forward information on the proposed change(s) to all interested parties including, but not limited to, all directly affected County/municipal departments, residents, and businesses. Information will also be forwarded to the North Carolina Division of Emergency Management. This information will be disseminated to seek input on the proposed amendment(s) for no less than a 45-day review and comment period.

At the end of the 45-day review and comment period, the proposed amendment(s), and all comments will be forwarded to the Regional Hazard Mitigation Planning Committee for final consideration. The Planning Committee will review the proposed amendment along with the comments received from other parties, and if acceptable, the committee will submit a recommendation for the approval and adoption of changes to the Plan.

In determining whether to recommend approval or denial of a Plan amendment request, the following factors will be considered by the Regional Hazard Mitigation Planning Committee:

- There are errors, inaccuracies, or omissions made in the identification of issues or needs in the Plan.
- Current issues or needs have been identified which are not adequately addressed in the Plan.
- There has been a change in information, data, or assumptions from those on which the Plan is based.

Upon receiving the recommendation from the Regional Hazard Mitigation Planning Committee, and prior to adoption of the Plan, the participating jurisdictions will hold a public hearing, if deemed necessary. The governing bodies of each participating jurisdiction will review the recommendation from the Regional Hazard Mitigation Planning Committee (including the factors listed above) and any oral or written comments received at the public hearing. Following that review, the governing bodies will take one of the following actions:

- Adopt the proposed amendments as presented.
- Adopt the proposed amendments with modifications.
- Refer the amendment request back to the Regional Hazard Mitigation Planning Committee for further revision; or defer the amendment request back to the Regional Hazard Mitigation Planning Committee for further consideration and/or additional hearings.

9.4. Continued Public Involvement

Public participation is an integral component to the mitigation planning process and will continue to be essential as this Plan evolves over time. As described above, significant changes or amendments to the Plan shall require a public hearing prior to any adoption procedures.

Other efforts to involve the public in the maintenance, evaluation, and revision process will be made as necessary. These efforts may include:

- Advertising meetings of the Regional Hazard Mitigation Planning Committee in local newspapers, public bulletin boards, government websites, social media sites and County and municipal office buildings.
- Designating willing and voluntary citizens and private sector representatives as official members of the Regional Hazard Mitigation Planning Committee.
- Utilizing local media to update the public on any maintenance and/or periodic review activities taking place.
- Utilizing the interactive websites and social media sites of participating jurisdictions to advertise any maintenance, updated surveys and/or periodic review activities taking place.

Appendix A: Acr

Abbreviation	Definition
ACS	American Community Survey
ARPA	American Rescue Plan Act
ASOS	Air Support Operations Squadron
AST	Above Ground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
BFE	Base Flood Elevation
BRIC	Building Resilient Infrastructure and Communities
CAD	Frigid Air Damming
CDBG	Community Development Block Grants
CDC	Center for Disease Control and Prevention
CFIS	Characteristic Fire Intensity Scale
CFR	Code of Federal Regulations
CIP	Capital Improvement Plans
COP	Continuity of Operations Plan
CRS	Community Rating System
CSSR	Climate Science Special Report
DFIRM	Digital Flood Insurance Rate Map
DMA	Disaster Mitigation Act (2000)
EAL	Expected Annual Loss
EAP	Emergency Action Plan
EF	Enhanced Fujita Scale
EM	Emergency Management
EMA	Emergency Management Agency
EOP	Emergency Operations Plan
EPA	US Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act (1986)
FD	Fire Department
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FIRM	Flood Insurance Rate Map
FIS	Fire Intensity Scale
FIS	Flood Insurance Study
FMA	Flood Mitigation Assistance
GIS	Geographic Information Systems
Hazmat	Hazardous Materials
Hazus	FEMAs Hazus Program
HHPD	High Hazard Dam Program
HMA	FEMA Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Program

Abbreviation	Definition
HMPC	Hazard Mitigation Planning Committee
HVRI	University of South Carolina Hazards and Vulnerability Research Institute
HVRI BRIC	University of South Carolina Hazards and Vulnerability Research Institute Baseline Resilience Indicators for Communities
IHRM	Integrated Hazard Risk Management Program from NCEM
LEPC	Local Emergency Planning Committee
MAP	Mitigation Action Plan
MMI	Modified Mercalli Intensity Scale
MPH	Miles per hour
NASA	National Aeronautics and Space Administration
NC Commerce	North Carolina Department of Commerce
NCCSR	North Carolina Climate Science Report
NCDC	National Climatic Data Center
NCDEQ	North Carolina Department of Environmental Quality
NCDFR	NC Division of Forest Resources
NCDNR	NC Department of Natural and Cultural Resources
NCDOT	North Carolina Department of Transportation
NCDPS	NC Department of Public Safety
NCEI	National Center for Environmental Information
NCEM	North Carolina Emergency Management
NCGS	North Carolina Geological Survey
NCR	US Nuclear Regulatory Commission
NCSTRAP	NC Streamflow Rehabilitation Assistance Program
NDMC	National Drought Mitigation Center
NEIC	National Earthquake Information Center
NFIP	National Flood Insurance Program
NFIP	National Flood Insurance Program
NGDC	National Geophysical Data Center
NGO	Non-Governmental Organization
NHC	National Hurricane Center
NID	National Inventory of Dams
NIDIS	National Integrated Drought Information System
NLDN®	US National Lighting Detection Network
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
NRI	National Risk Index
NWS	National Weather Service
OEM	Office of Emergency Management
PD	Police Department
PDSI	Palmer Drought Severity Index

Abbreviation	Definition
PGA	Peak Ground Acceleration
PHMSA	US Department of Transportation Pipeline and Hazardous Materials Safety Administration
QR	Quick Response Code
RFPE	Regulatory Flood Protection Elevation
RMT	NCEMs Risk Management Tool
RV	Recreational Vehicles
SAR	Search and Rescue
SDE	Substantial Damage Estimate
SFHA	Special Flood Hazard Area
SOGs	Standard Operating Guidelines
SPC	Storm Prediction Center
SVI	Social Vulnerability Index
SWRAP	Southern Wildfire Risk Assessment Portal
TORRO	Tornado and Storm Research Organization
USACE	United States Army Corps of Engineers
USD	US Dollars
USGS	United States Geological Survey
UST	Underground Storage Tank
WDS	World Data Service
WES	Wildfire Exposure Score
WFSI	Wildland Fire Susceptibility Index
WHP	Wildfire Hazard Potential

Appendix B –

Table B- 1: Historic Places in the National Register[1]

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
80002867	Academy Hill Historic District	Iredell	Statesville	Industry; Education; Architecture	District
95000173	Allison Woods	Iredell	Statesville	Black; Landscape Architecture; Architecture; Agriculture	District
80002855	Bethesda Presbyterian Church, Session House And Cemetery	Iredell	Houstonville	Architecture; Religion	Building
80002859	Brawley, Espy Watts, House	Iredell	Mooresville	Industry; Commerce; Architecture	Building
80002881	Campbell, Perciphull, House	Iredell	Union Grove	Architecture	Building
80002868	Center Street A.M.E. Zion Church	Iredell	Statesville	Black; Architecture	Building
80002863	Centre Presbyterian Church, Session House And Cemeteries	Iredell	Mount Mourne	Art; Architecture	Building
80002864	Coddle Creek Associate Reformed Presbyterian Church, Session House And Cemetery	Iredell	Mount Mourne	Art; Architecture; Religion	Building
80002860	Cornelius House	Iredell	Mooresville	Architecture	Building
80002856	Daltonia	Iredell	Houstonville	Agriculture; Architecture	Building
80002850	Damascus Baptist Church Arbor	Iredell	Harmony	Architecture; Religion	Building
80002880	Davidson House	Iredell	Troutman	Architecture	Building
80002869	East Broad Street-Davie	Iredell	Statesville	Architecture	District

[1] "National Register Database and Research" (National Park Service, n.d.), https://www.nps.gov/subjects/nationalregister/database-research.htm.

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
	Avenue Historic District				
80002857	Ebenezer Academy, Bethany Presbyterian Church And Cemetery	Iredell	Houstonville	Art; Architecture; Religion	Building
80002870	Eccles, Henry, House	Iredell	Statesville	Architecture	Building
82003471	Falls-Hobbs House	Iredell	Statesville	Architecture	Building
73001353	Farmville Plantation	Iredell	Elmwood	Architecture	Building
82003472	Feimster House	Iredell	Statesville	Architecture	Building
70000458	Fort Dobbs	Iredell	Statesville	Military; Politics/Government	Site
80002851	Gaither House	Iredell	Harmony	Architecture	Building
82003473	Hargrave House	Iredell	Statesville	Architecture	Building
80002852	Holland-Summers House	Iredell	Harmony	Architecture	Building
80002865	Houston, George, House	Iredell	Mount Mourne	Agriculture; Architecture	Building
79003434	Iredell County Courthouse	Iredell	Statesville	Politics/Government; Architecture; Social History	Building
75001275	Johnson-Neel House	Iredell	Mooresville	Architecture	Building
80002871	Key Memorial Chapel	Iredell	Statesville	Architecture; Religion	Building
80002872	King-Flowers-Keaton House	Iredell	Statesville	Architecture	Building
100006460	Long, Henry Fletcher And Carrie Allison, House	Iredell	Statesville	Architecture; Health/Medicine	Building
73001354	Main Building, Mitchell College	Iredell	Statesville	Education; Architecture	Building
80002873	Mcclelland-Davis House	Iredell	Statesville	Agriculture; Architecture	Building
80002874	Mcelwee Houses	Iredell	Statesville	Commerce; Architecture	District
80002875	Mitchell College Historic District (Additional	Iredell	Statesville	Education; Politics/Government; Architecture; Religion; Social History	District

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
	Documentation Ii)				
2000932	Mitchell College Historic District (Boundary Increase	Iredell	Statesville	Health/Medicine; Architecture	District
80002861	Mooresville Historic District	Iredell	Mooresville	Commerce; Transportation; Exploration/Settlement ; Architecture	District
100005197	Mooresville Historic District (Boundary Increase)	Iredell	Mooresville	Architecture; Community Planning And Development	District
12000238	Mooresville Mill Village Historic District	Iredell	Mooresville	Architecture; Community Planning And Development; Industry	District
100008853	Mooresville Water Pump And Filter Plant	Iredell	Mooresville	Architecture; Engineering	Building
80002853	Morrison-Campbell House	Iredell	Harmony	Architecture	Building
80002876	Morrison-Mott House	Iredell	Statesville	Industry; Architecture	Building
74001354	Mount Mourne	Iredell	Mount Mourne	Politics/Government; Architecture	Building
100007249	Norwood School	Iredell	Statesville	Architecture; Education	Building
100007250	Ramsey Farm	Iredell	Statesville	Architecture	Building
100005198	Reid Memorial Presbyterian Church	Iredell	Mooresville	Architecture; Black; Ethnic Heritage; Social History	Building
80002877	Sharpe, Col. Silas Alexander, House	Iredell	Statesville	Industry; Politics/Government; Architecture	Building
80002854	Snow Creek Methodist Church And Burying Ground	Iredell	Harmony	Art; Architecture; Religion	Building
80002862	South Broad Street Row	Iredell	Mooresville	Architecture	District
95000635	South Race Street Historic District	Iredell	Statesville	Community Planning And Development; Architecture	District

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
80002878	Statesville Commercial Historic District	Iredell	Statesville	Industry; Architecture	District
80002879	Turner, Henry, House And Caldwell-Turner Mill Site	Iredell	Statesville	Industry; Historic - Non-Aboriginal; Architecture	District
74001355	U.S. Post Office And County Courthouse	Iredell	Statesville	Architecture	Building
100002363	United States Post Office And Court House-Statesville	Iredell	Statesville	Architecture; Art; Politics/Government	Building
82003474	Waddle-Click Farm	Iredell	Statesville	Agriculture; Architecture	Building
100007596	Watkins Chapel Ame Zion Church	Iredell	Mooresville	Architecture; Ethnic Heritage-Black	Building
80002858	Welch-Nicholson House And Mill Site	Iredell	Houstonville	Agriculture; Architecture	Building
80002866	Wood Lawn	Iredell	Mount Mourne	Architecture	Building
83003998	Back Creek Presbyterian Church And Cemeterey	Rowan	Mt. Ulla	Architecture; Religion	Building
2001717	Barber Farm	Rowan	Cleveland	Agriculture; Architecture	District
92000701	Bernhardt House	Rowan	Salisbury	Architecture	Building
82001303	Bernhardt, George Matthias, House	Rowan	Rockwell	Architecture; Agriculture	Building
82001304	Bost, Henry Connor, House	Rowan	South River	Agriculture; Architecture	Building
96000564	Boyden High School	Rowan	Salisbury	Architecture; Education	Building
71000618	Braun, Michael, House	Rowan	Granite Quarry	Architecture	Building
85001449	Brooklyn-South Square Historic District	Rowan	Salisbury	Commerce; Architecture	District
100006854	Cannon, Ella Brown, House	Rowan	Salisbury	Architecture	Building

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
72000992	Chambers, Maxwell, House	Rowan	Salisbury	Architecture	Building
83003995	China Grove Roller Mill	Rowan	China Grove	Industry; Architecture; Agriculture	Building
11000623	Christ Episcopal Church	Rowan	Cleveland	Architecture	Building
100008465	City Motor Company	Rowan	Salisbury	Architecture; Commerce	Building
100003300	Cleveland School	Rowan	Cleveland	Architecture; Black; Education; Ethnic Heritage	Building
70000468	Community Building	Rowan	Salisbury	Politics/Government; Architecture	Building
82003507	Corriher Grange Hall	Rowan	Five Points	Agriculture; Architecture	Building
100002050	East Spencer Graded School	Rowan	East Spencer	Architecture; Education	Building
10001176	Eastover	Rowan	Salisbury	Architecture; Industry	Building
99000273	Ellis Street Graded School Historic District	Rowan	Salisbury	Architecture; Community Planning And Development; Education	District
99000394	Fulton Heights Historic District	Rowan	Salisbury	Architecture; Community Planning And Development	District
72000990	Grace Evangelical And Reformed Church	Rowan	Rockwell	Architecture	Building
1000017	Granite Quarry School	Rowan	Granite Quarry	Education; Architecture; Black	Building
9000703	Griffith-Sowers House	Rowan	Salisbury	Architecture	Building
84002492	Grimes Mill	Rowan	Salisbury	Industry; Architecture	Building
99000198	Grubb-Sigmon-Weisiger House	Rowan	Salisbury	Social History; Architecture	Building
82001305	Hall Family House	Rowan	Bear Poplar	Agriculture; Politics/Government; Architecture	Building
97001545	Hambley-Wallace House	Rowan	Salisbury	Architecture; Engineering; Landscape Architecture; Commerce	Building
72000993	Henderson, Archibald, Law Office	Rowan	Salisbury	Law; Architecture	Building

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
10000208	J.C. Price High School	Rowan	Salisbury	Architecture; Education; Black	Building
76001337	Kerr Mill	Rowan	Mill Bridge	Industry; Architecture	Building
82003505	Kerr, Gen. William, House	Rowan	Enochville	Military; Architecture	Building
85001346	Kesler Manufacturing Co.-Cannon Mills Co. Plant No. 7 Historic District	Rowan	Salisbury	Industry; Architecture	District
83001914	Knox Farm Historic District	Rowan	Cleveland	Agriculture; Architecture; Religion	District
93000737	Knox-Johnstone House	Rowan	Cleveland	Architecture	Building
82003509	Livingstone College Historic District	Rowan	Salisbury	Black; Education; Architecture; Religion; Social History	District
72000995	Long, Alexander, House	Rowan	Spencer	Architecture	Building
88003006	Lyerly Building For Boys	Rowan	Gold Hill Township	Architecture; Social History	Building
14000264	Mccanless, Napoleon Bonaparte, House	Rowan	Salisbury	Commerce; Industry	Building
5000452	Mccanless, Walter, House	Rowan	Salisbury	Architecture	Building
72000994	Mcneely-Strachan House	Rowan	Salisbury	Education; Architecture	Building
4000463	Monroe Street School	Rowan	Salisbury	Education; Black	Building
80002899	Mount Vernon	Rowan	Woodleaf	Historic - Non-Aboriginal; Architecture; Communications	District
85003188	Mount Zion Baptist Church	Rowan	Salisbury	Black; Religion	Building
85001347	North Long Street-Park Avenue Historic District	Rowan	Salisbury	Commerce; Architecture	District
85001674	North Main Street Historic District	Rowan	Salisbury	Commerce; Architecture	District

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
83001911	Owen-Harrison House	Rowan	Mill Bridge	Other; Art; Architecture; Agriculture	Building
90001991	Phifer, John, Farm	Rowan	Cleveland	Agriculture; Architecture	District
82003508	Rankin-Sherrill House	Rowan	Mt. Ulla	Agriculture; Health/Medicine; Architecture	Building
75001289	Salisbury Historic District	Rowan	Salisbury	Education; Law; Politics/Government; Architecture	District
88000141	Salisbury Historic District (Boundary Increase I)	Rowan	Salisbury	Architecture	District
89000760	Salisbury Historic District (Boundary Increase Ii)	Rowan	Salisbury	Community Planning And Development; Architecture	District
826	Salisbury Historic District (Boundary Increase Iii)	Rowan	Salisbury	Commerce; Architecture	District
99000393	Salisbury National Cemetery	Rowan	Salisbury	Military	Site
86003460	Salisbury Railroad Corridor Historic District	Rowan	Salisbury	Commerce; Transportation; Architecture	District
3000342	Salisbury Railroad Corridor Historic District (Boundary Increase)	Rowan	Salisbury	Architecture; Commerce	District
75001290	Salisbury Southern Railroad Passenger Depot	Rowan	Salisbury	Transportation; Architecture	Building
100007763	Salisbury Va Hospital Historic District	Rowan	Salisbury	Health/Medicine	District
87002233	Shaver Rental Houses District	Rowan	Salisbury	Architecture	District

Ref#	Property Name	County	City	Area Of Significance	Category Of Property
9000704	Sherrill, John Carlyle And Anita, House	Rowan	Mount Ulla	Architecture; Commerce; Industry	Building
82003506	Shuping's Mill Complex	Rowan	Faith	Industry; Economics; Architecture	Building
100007594	Southern Railway Passenger Car Number 1211	Rowan	Spencer	Ethnic Heritage-Black; Social History	Structure
78001972	Southern Railway Spencer Shops	Rowan	Spencer	Industry; Transportation; Communications	Site
84000619	Spencer Historic District	Rowan	Spencer	Economics; Transportation; Education; Architecture	District
82003510	St. Andrew's Episcopal Church And Cemetery	Rowan	Woodleaf	Architecture; Religion	Building
94001051	Steele, John, House	Rowan	Salisbury	Politics/Government	Building
84000595	Stigerwalt, John, House	Rowan	Bostian Heights	Exploration/Settlement; Architecture	Building
100006463	Temple, Edgar S. And Madge, House	Rowan	Salisbury	Architecture	Building
83001912	Third Creek Presbyterian Church And Cemetery	Rowan	Cleveland	Art; Architecture	Building
84002488	Thyatira Presbyterian Church, Cemetery, And Manse	Rowan	Mill Bridge	Architecture; Religion	Building
88002028	Wiley, Calvin H., School	Rowan	Salisbury	Education; Architecture	Building
82003504	Wood Grove	Rowan	Bear Poplar	Agriculture; Architecture	Building
72000991	Zion Lutheran Church	Rowan	Rockwell	Architecture; Religion	Building

Table C- 1: Sign in sheet from HMP Meeting on June 12, 2024, from 2-4pm

Name	Affiliation	Email
Kelly Keefe	Planner, AECOM	Kelly.keefe@aecom.com
Mckenzie Houston	Planner, AECOM	Mckenzie.houston@aecom.com
Ryan Storzbach	GIS Specialist, AECOM	richard.a.franks@aecom.com
Richard Franks	Planner/Engineer, AECOM	richard.a.franks@aecom.com
Kelsey Peterson	Resilience Planner, AECOM	kelsey.peterson@aecom.com
Seth Holbrook	GIS Specialist, AECOM	seth.holbrook@aecom.com
Chris Bridges	GIS Mapping Administrator, Iredell County	cbridges@iredellcountync.gov
Franklin Gover	Town Manager, Town of China Grove	fgover@chinagrovenc.gov
Peter Franzese	Town Manager, Town of Spencer	pfranzese@spencernc.gov
Meredith Smith	Mayor, Town of Landis	
Valerie Steele	Airport & Transit Director, Rowan County	valerie.steele@rowancountync.gov
Michael Ambrose	Town Manager, City of Landis	mambrose@townoflandisnc.gov
Chris Crew	Mitigation Plans Manager, NCEM	
Jody Smyre	Iredell County EM Coordinator	jsmyre@iredellcountync.gov
Aaron Poplin	Rowan County Planning	Aaron.poplin@rowancountync.gov
Todd Marshall	Iredell County EM Planner	Todd.marshall@iredellcountync.gov
Allyson Summit	Rowan County	Allyson.summitt@rowancountync.gov
Kent Greene	Iredell EM	Kent.greene@iredellcountync.gov
TJ Brown	Rowan County Emergency Services	Tj.brown@rowancountync.gov
Jonathan Williams	Iredell County Planning	Jonathan.williams@iredellcountync.gov
Leslie Belkin	Public	
Randall Moore	City of Statesville CFM	rmoore@statesvillenc.net
Matthew Todd	Iredell County Planning	mtodd@iredellcountync.gov
Chris Tester	City of Salisbury Public Works	ctest@salisburync.gov
Brittany Barnhardt	Mayor of Granite Quarry	bbarnhardt@granitequarrync.gov
Robert Partner	Salisbury Fire Department	Bparn@salisburync.gov

Table C- 2: Sign in Sheet from August 14, 2024, from 1-2pm

Name	Title	Organization
McKenzie Houston	Resilience Planner	AECOM
Kelly Keefe	Lead Planner	AECOM
Kelsey Peterson	Resilience Planner	AECOM
Seth Holbrook	GIS Specialist	AECOM
Peyton Campbell	Resilience Planner	AECOM
Bob Parnell	Fire Chief	City of Salisbury
Patrick Smith	Police Chief	City of Salisbury
Carl Baker	Hazard Mitigation Planner	NCEM
Curt Deaton	Fire-Rescue	Town of Mooresville
Jim Greene	City Manager	City of Salisbury
Joel Reese	Local History Librarian	Iredell County
Town Manager		Town of Granite Quarry
Jason Hord	Interim Town Manager/Fire Chief	Town of Granite Quarry
Allyson Summit	Emergency Services Planner	Rowan County
Karen Hamby	Area 11 Coordinator	NCEM
Kent Greene	Director of Fire Services & Emergency Management	Iredell County
Aaron Poplin	Planner	Rowan County
Rodney Harris	Assistant County Manager	Iredell County
Jody Smyre	Emergency Management Coordinator	Iredell County
TJ Brown	Emergency Services Deputy Chief	Rowan County
William Vaughan	Public Utilities Director	Statesville
Chris Crew	Mitigation Plans Manager	NCEM
Herman Caulder	Assistant Planning Director	City Statesville
John Mello	Hazard Mitigation Planner	NCEM
Kyle O Bell III	Assistant Chief	City of Statesville
Randall Moore	Stormwater Program Manager	City of Statesville
Peter Franzese	Town Manager	Town of Spencer
Glenn Kurfees	Fire Chief	City of Statesville
John Hatcher	Grants Manager	City of Statesville
Matthew Todd	Planning & Development Dierctor	Iredell County
Valerie Steele	Airport & Transit Director	Rowan County

Table C- 3: Sign in sheet from the Mitigation Actions Workshop on September 20, 2024

Name	Organization	Title
Mckenzie Houston	AECOM	Planner
Peyton Campbell	AECOM	Planner
Kelly Keefe	AECOM	Planner

Name	Organization	Title
Valerie S Steele	Rowan County Airport & Transit	
Kent Greene	Iredell Emergency Management	Director
Seth Holbrook	AECOM	Planner
John Crew	NCEM	Hazard Mitigation Planner
Kelly Baker	City of Salisbury	Assistant City Manager
Carl Baker	NCEM	
Matthew Todd	Planning Director	Planning
Jody Smyre	Iredell Emergency Management	Emergency Management Coordinator
John Mello	NCEM	Hazard Mitigation Planner
Allyson S Summit	Rowan County	
Peter Franzese	Town of Spencer	Town Manager
Jason Hord	Town of Granite Quarry	Town Manager
Rodney Harris	Iredell County	
Kelsey Peterson	AECOM	Planner
Randall Moore	City of Statesville	Stormwater Program Manager
Bob Parnell	City of Salisbury	

Table C- 4: Sign in sheet on October 16, 2024, for HMP Office Hours

Name	Title	Organization
McKenzie Houston	Resilience Planner	AECOM
Matthew Todd	Planning & Development Director	Iredell County
Aaron Poplin	Planner	Rowan County
Randall Moore	Stormwater Program Manager	Statesville
Kelly Keefe	Lead Planner	AECOM

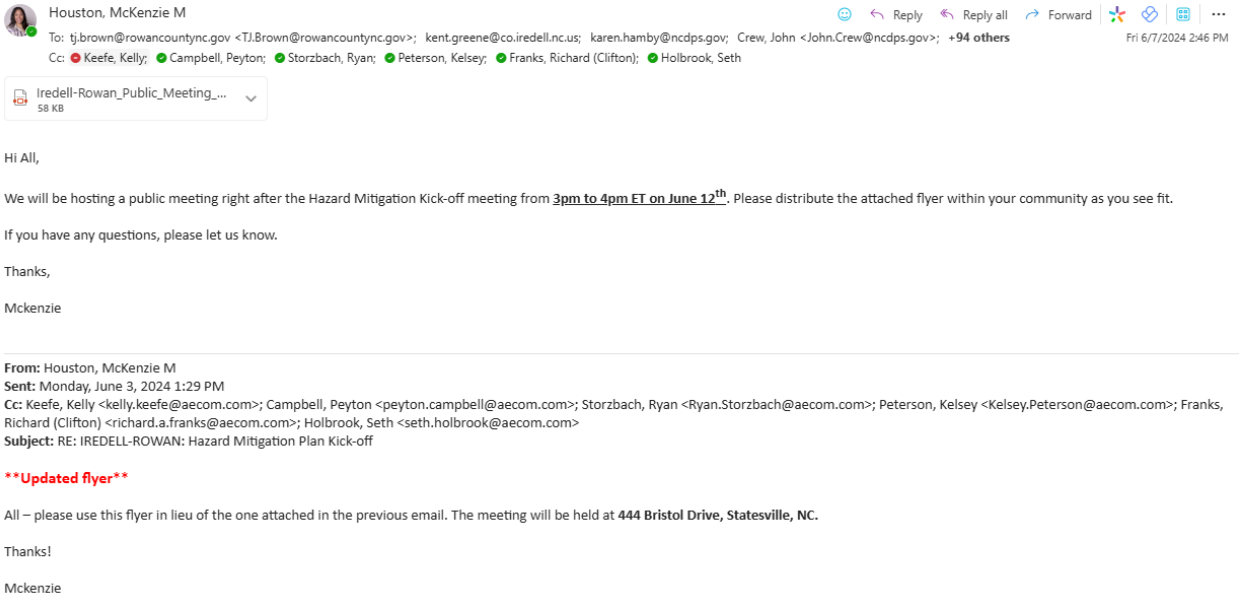
Table C- 5: Sign in sheet from meeting on November 20, 2024 at 11AM

Name	Title	Organization
Houston, McKenzie M	Resilience Planner	AECOM
Peyton Campbell	Resilience Planner	AECOM
Kelsey Peterson	Resilience Planner	AECOM
Seth Holbrook	GIS Specialist	AECOM
Kelly Keefe	Resilience Planner	AECOM
Ronald Wyatt	Town Manager	Town of Troutman
Jason Smith	Fire Chief	Town of Landis
Jason Hord	Interim Town Manager	Town of Granite Quarry
Austin Waugh	Public Works Director	Town of Troutman
Randall Moore	Stormwater Program Manager	Statesville
Michael Ambrose	Town Manager	Landis
Kymberly Kudla		FEMA
Chris Crew	Hazard Mitigation Manager	North Carolina Emergency Management
Carl Baker	Hazard Mitigation Planner	North Carolina Emergency Management
Aaron Poplin	Planner	Rowan County
Allyson Summitt		Rowan County
town manager	Town Administrator	East Spencer
Peter Franzese	Town Manager	Spencer
John Mello	Hazard Mitigation Planner	North Carolina Emergency Management

Name	Organization	Title
Mckenzie Houston	AECOM	Resilience Planner
Kelly Keefe	AECOM	Resilience Planner
Michael Ambrose	Town of Landis	Town Manager
Carl Baker	NCEM	Hazard Mitigaiton Planner
Kent Greene	Iredell County	Emergency Manager
Karen Hamby	NCEM	Area 11 Coordinator
Aaron Poplin	Rowan County	Planning and Development
Allyson Sumitt	Rowan County Emergency Services	Planner
Jason Hord	Town of Granite Quarry	Town Manager
TJ Brown	Rown County Emergency Services	Deputy Chief
Randall Moore	City of Statesville	Stormwater Program Manager
Chris Crew	NCDPS	Mitigation Planner
Curt Deaton	Town of Mooresville	Fire Chief

Jenn Bosser	Iredell EDC	President & CEO
Chris Crew	NCDPS	Hazard Mitigaiton Planner
Franklin Gover	Town of China Grove	Assistant Town Manager
Peter Franzese	Town of Spencer	Town Manager
Jesse Lynn	Town of Seagrove	Town Clerk

Table C- 6: Sign in sheet from Draft Review Meeting on January 16, 2025



Houston, McKenzie M

Reply | Reply all | Forward

To: tj.brown@rowancountync.gov <TJ.Brown@rowancountync.gov>; kent.greene@co.iredell.nc.us; karen.hamby@ncdps.gov; Crew, John <John.Crew@ncdps.gov>; **+94 others**

Fri 6/7/2024 2:46 PM

Cc: Keefe, Kelly; Campbell, Peyton; Storzbach, Ryan; Peterson, Kelsey; Franks, Richard (Clifton); Holbrook, Seth

Iredell-Rowan_Public_Meeting_...
58 KB

Hi All,

We will be hosting a public meeting right after the Hazard Mitigation Kick-off meeting from **3pm to 4pm ET on June 12th**. Please distribute the attached flyer within your community as you see fit.

If you have any questions, please let us know.

Thanks,

Mckenzie

From: Houston, McKenzie M
Sent: Monday, June 3, 2024 1:29 PM
Cc: Keefe, Kelly <kelly.keefe@aecom.com>; Campbell, Peyton <peyton.campbell@aecom.com>; Storzbach, Ryan <Ryan.Storzbach@aecom.com>; Peterson, Kelsey <Kelsey.Peterson@aecom.com>; Franks, Richard (Clifton) <richard.a.franks@aecom.com>; Holbrook, Seth <seth.holbrook@aecom.com>
Subject: RE: IREDELL-ROWAN: Hazard Mitigation Plan Kick-off

****Updated flyer****

All – please use this flyer in lieu of the one attached in the previous email. The meeting will be held at **444 Bristol Drive, Statesville, NC.**

Thanks!

Mckenzie

Figure C- 1: June 12th meeting invitation

Announcement

Iredell-Rowan Regional Hazard Mitigation Plan Public Meeting

What: Public meeting to obtain and incorporate communities' thoughts and concerns about the Iredell-Rowan Regional Hazard Mitigation Plan

When: Tuesday, June 12th, 2024
"Come and go" anytime starting from 3pm to 4pm ET

Where: 404 Bristol Drive, Statesville, NC 28677

Floods, Wildfires, Tornadoes, Winter Storms, Hurricanes...What Concerns You?

Do you have ideas for helping our community become better prepared for future natural disasters?

You are invited to come share your thoughts and concerns about your community's resiliency against natural disasters and leave your comments for the final decision-making process.

About the Iredell-Rowan Regional Hazard Mitigation Plan

The counties of the Iredell-Rowan Region in coordination with their participating municipal jurisdictions, are finalizing a regional hazard mitigation plan that covers the multi-county area. The Iredell-Rowan Regional Hazard Mitigation Plan identifies local policies and actions for reducing risk and future losses from natural hazards such as floods, severe storms, wildfires, and winter weather.

For More Information

If you would like to learn more, please contact one of the following county coordinators for this project:

TJ Brown, Rowan County Emergency Management
704.216-8500/ tj.brown@rowancountync.gov

Kent Greene, Iredell County Emergency Management
704.832-2161/ kent.greene@co.iredellnc.gov

You can also visit https://www.ncdps.gov/our-organization/emergency-management/hazard-mitigation/hazard-mitigation-plans#IredellRowanRegionalPlan-6713 for more information

We hope to see you June 12th, 2024!

Figure C- 2: Iredell Rowan Public Meeting Kickoff Invitation

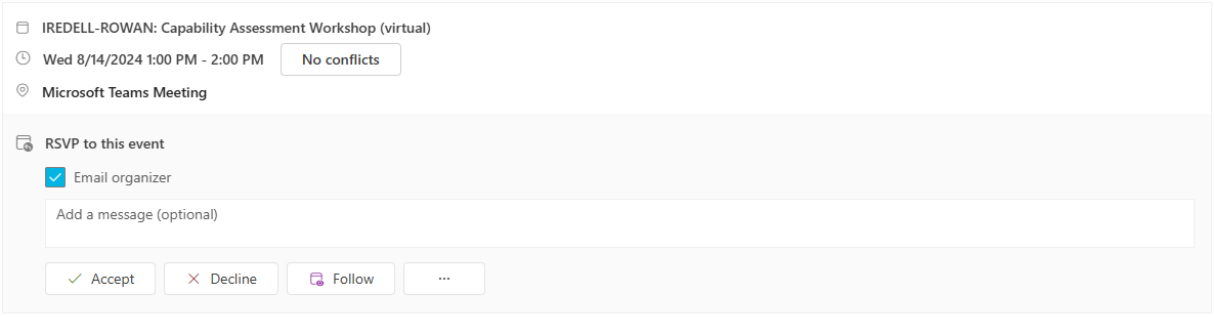


Figure C- 5: Capability assessment workshop invitation for August 14, 2024.

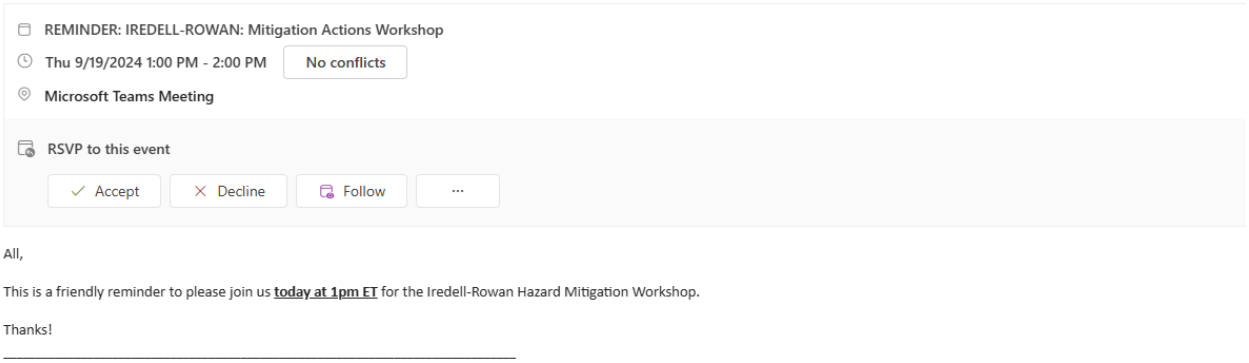


Figure C- 4: Hazard mitigation workshop invitation for September 19, 2024.

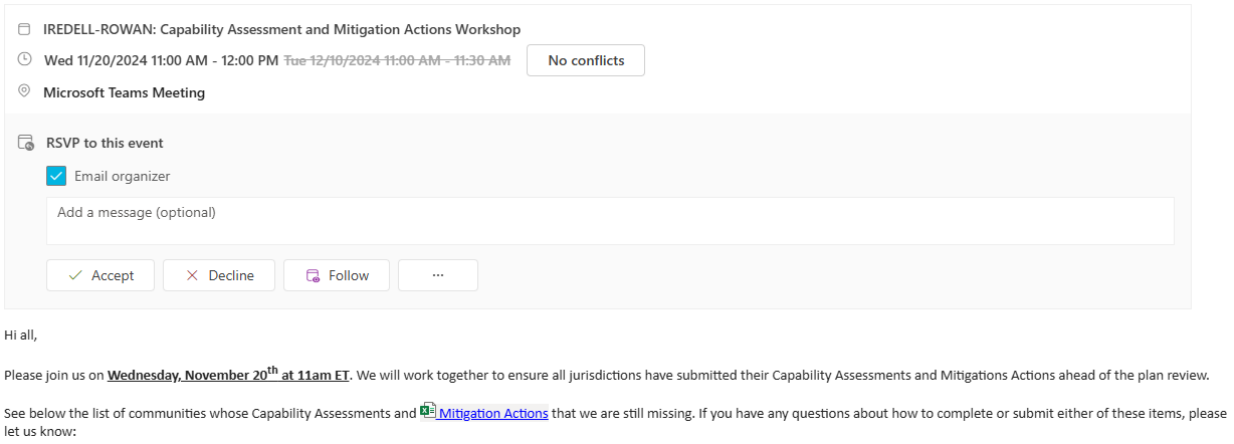


Figure C- 3: November 20, 2024 capability assessment and mitigation actions workshop invitation

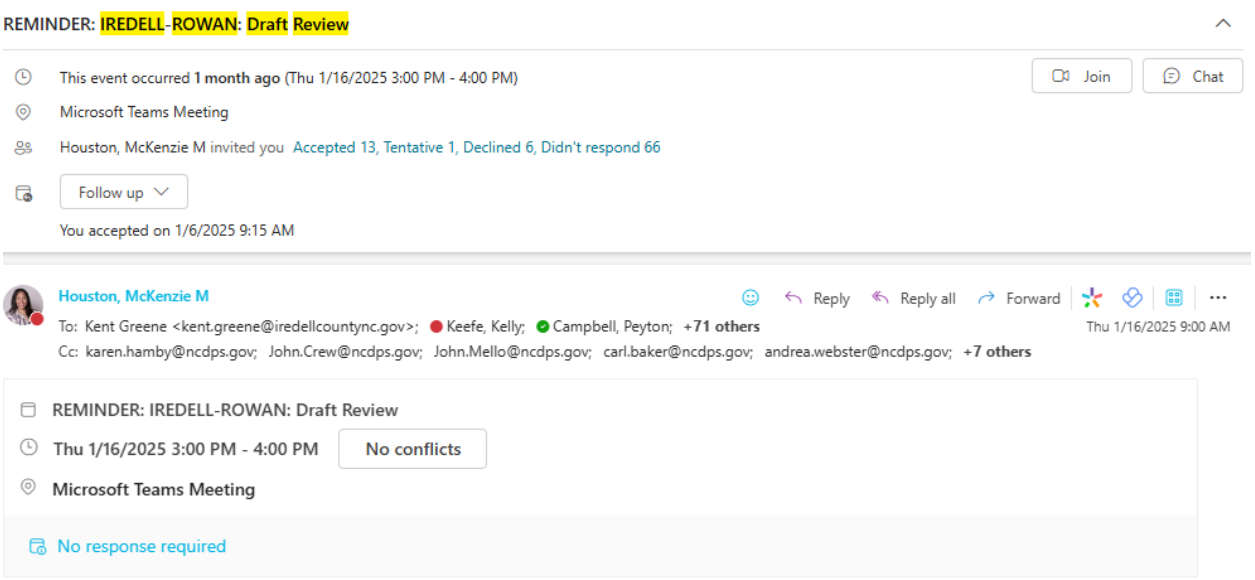


Figure C- 6: Iredell Rowan Draft Review Meeting Invitation January 16, 2025

Figure C- 8: Rowan County Emergency Services HMP input Post on Facebook

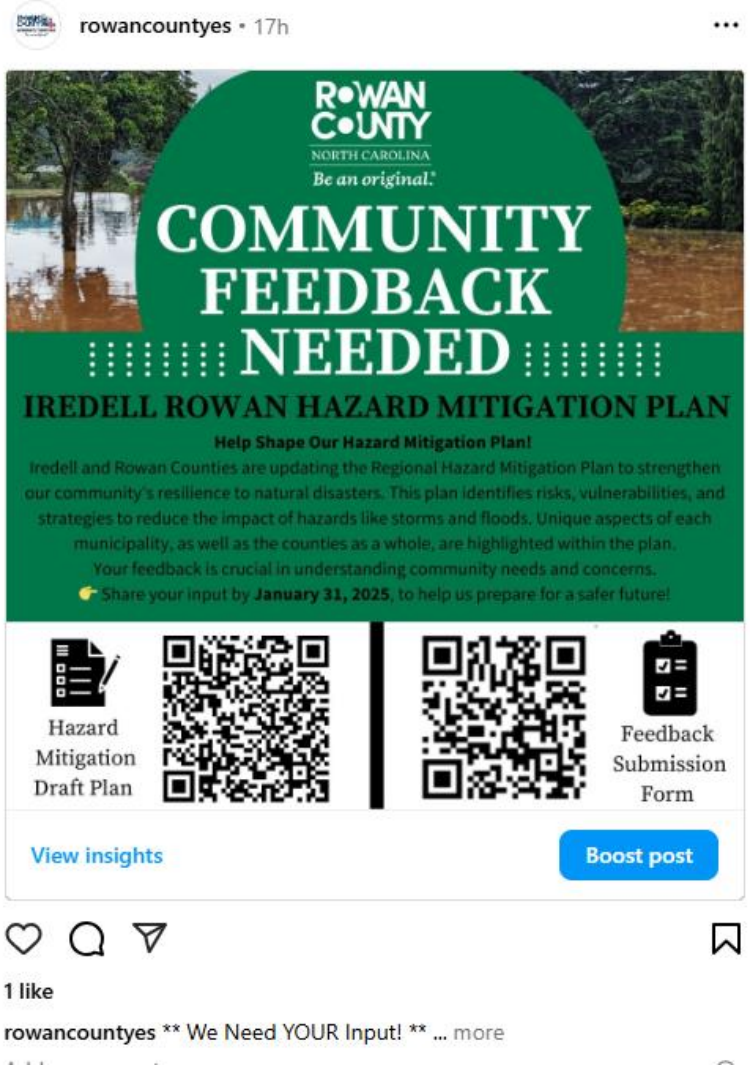


Figure C- 7: Rowan County Emergency Services Input Post on Instagram

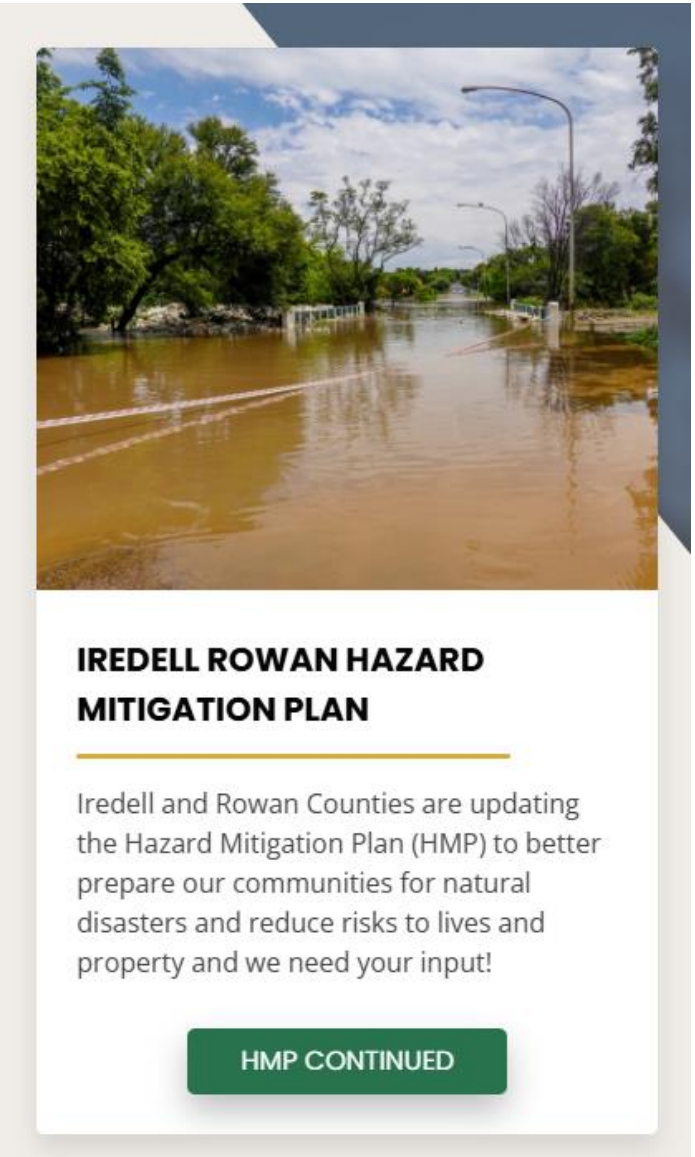


Figure C- 9: Rowan County Website Draft Plan Feedback Request

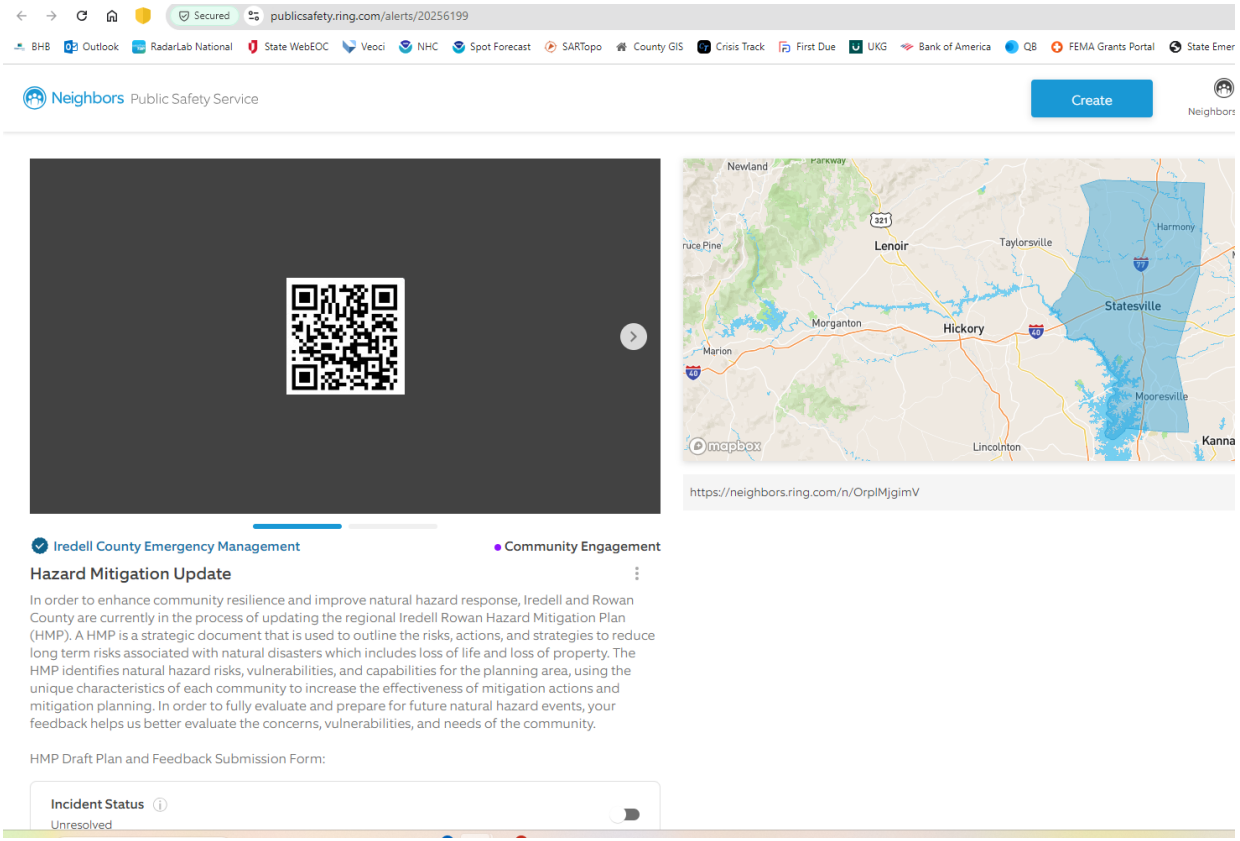


Figure C- 10: Ring public safety post from Iredell County Emergency Management to request public feedback on the HMP draft.

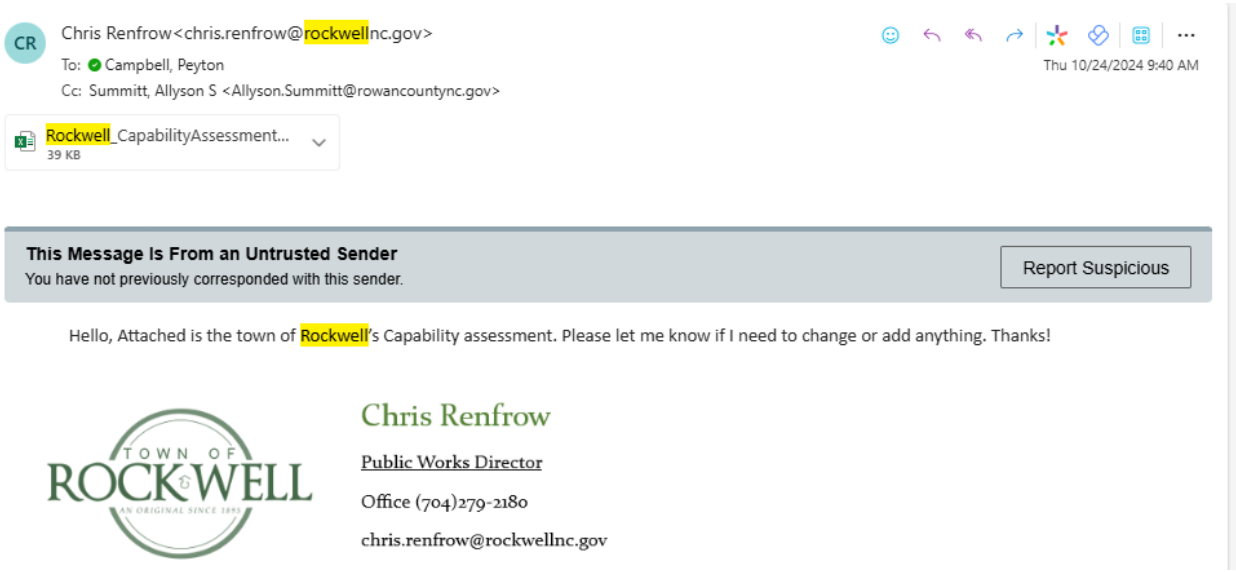


Figure C- 12: Correspondence with the Town of Rockwell.

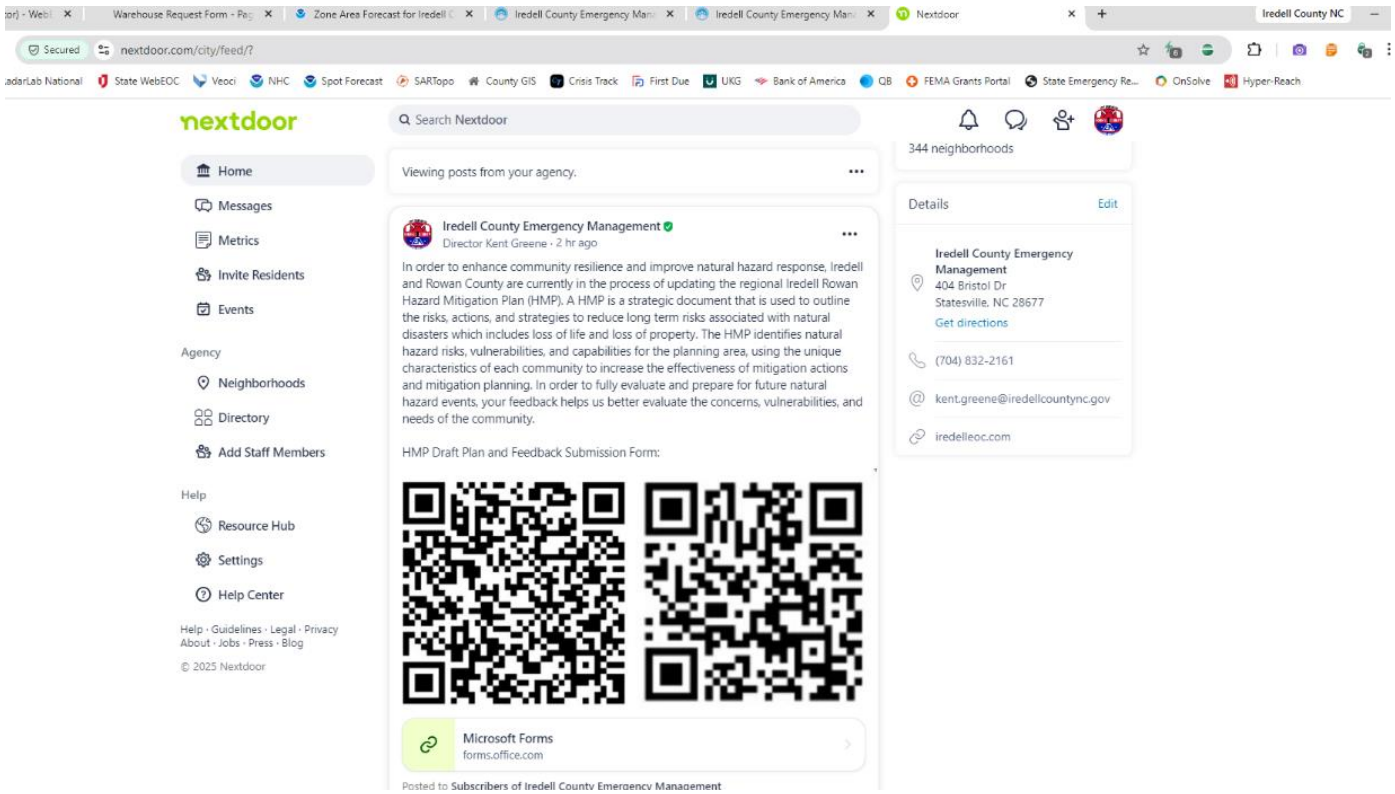


Figure C- 11: Nextdoor Iredell County Emergency Management post to request public feedback on the HMP Draft

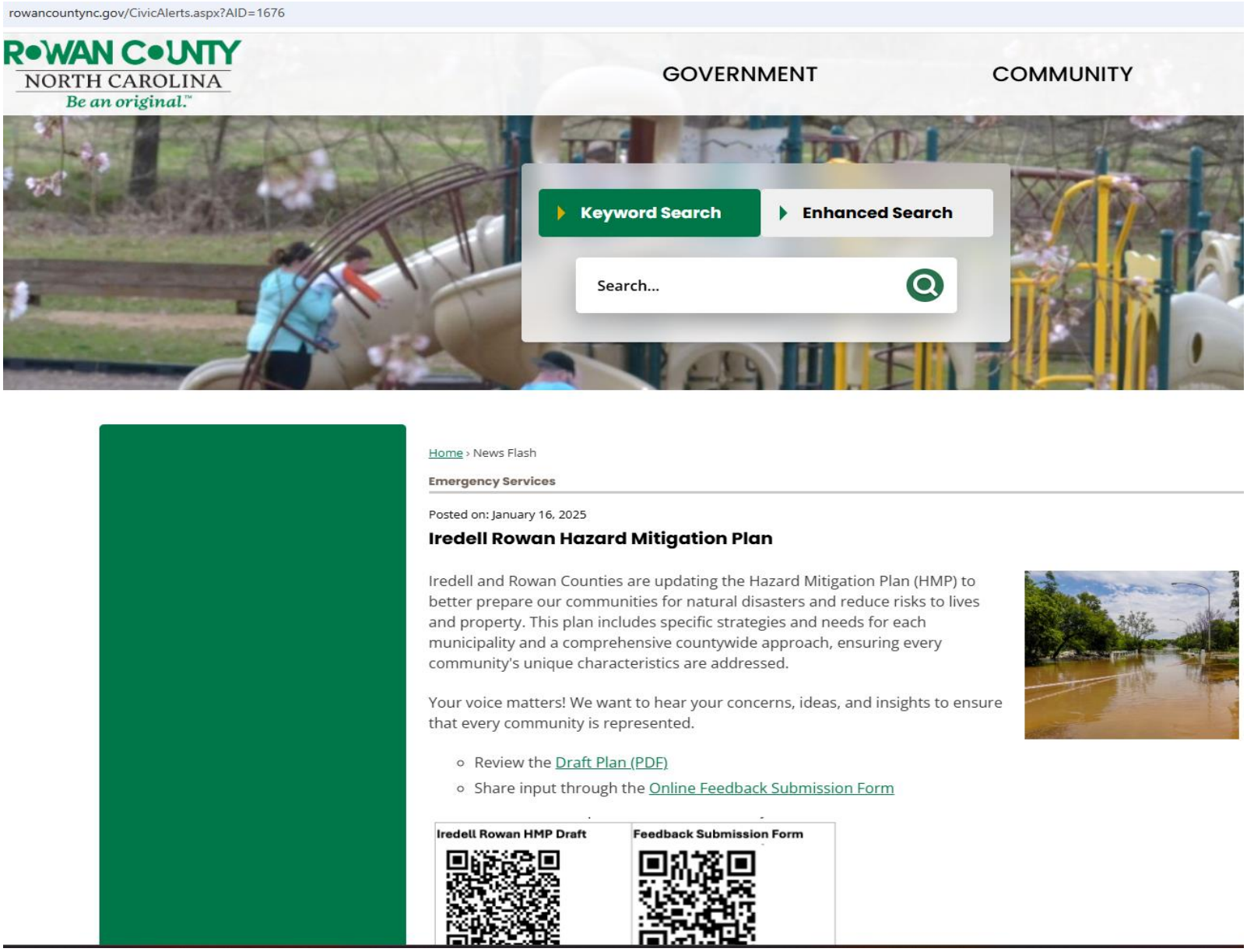


Figure C- 13: Rowan County web site public feedback request for the HMP Draft

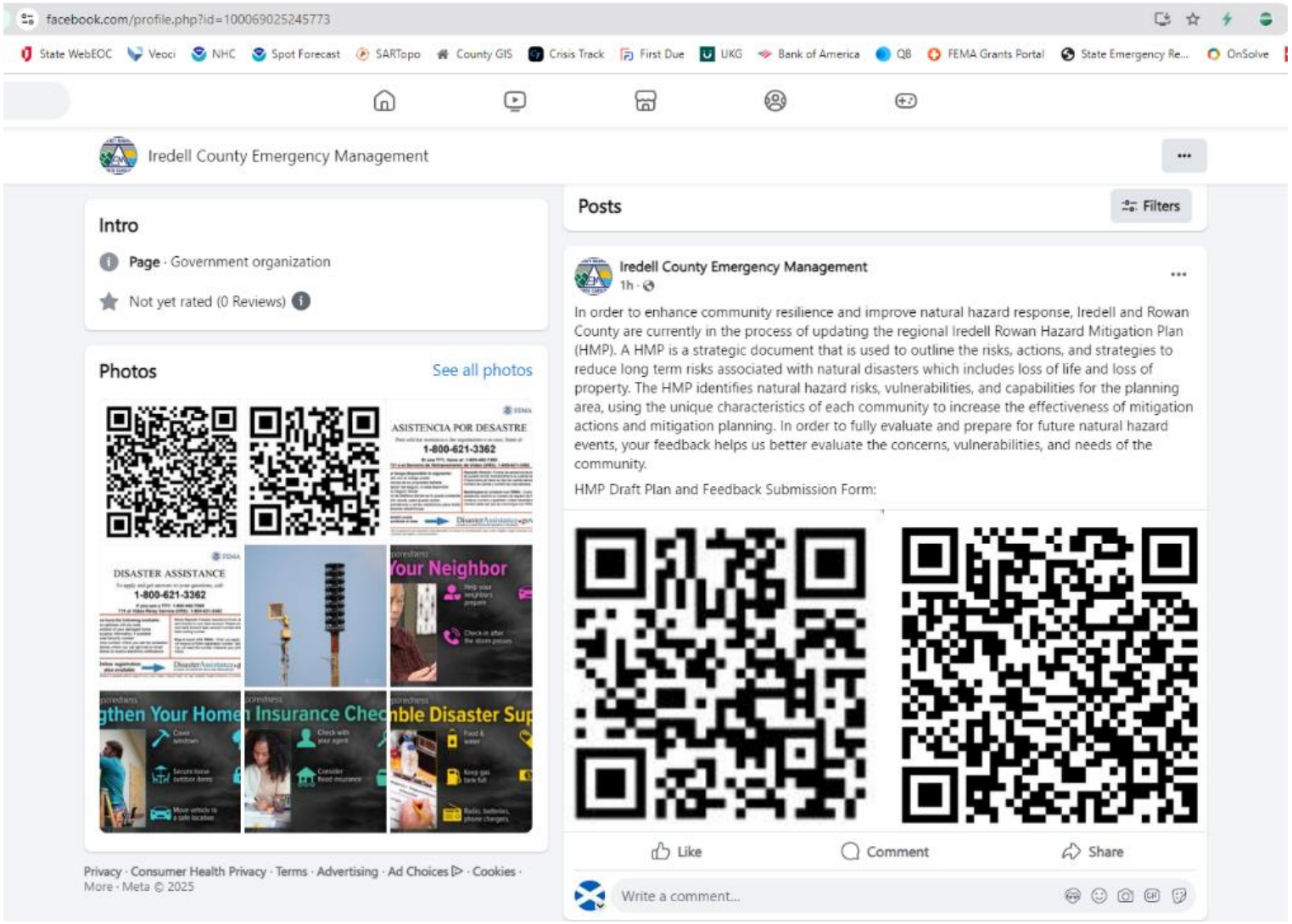


Figure C- 14: Iredell County Emergency Management Facebook post requesting feedback on the HMP draft

Figure C- 15: City of Statesville website post requesting public input on the Iredell Rowan HMP Draft Plan

Appendix D:

All of the following tables were downloaded from iRISK and the RMT Hazard Mitigation Planning Tool. This analysis is from NCEM's Risk Management Tool (RMT) which uses web-based tools and a core geodatabase to incorporate multiple applications and analyze the properties, population, and high loss buildings at risk of hazards based previous hazard occurrences. The quantitative analysis in the RMT involves use of the iRISK database, which provides modeled damage estimates for flood, wind, wildfire, and other hazards. iRISK data is not available for every hazard listed in this HMP, but all hazards included in the RMT are listed below. For more information about iRISK and NCEM's RMT, please visit https://rmt.nc.gov/Index.aspx.

Table D- 1: River Flooding for 10-year Flooding Events

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF SALISBURY	119	131	$1,673,270	9	$147,873	3	$73,150	143	$1,894,293
IREDELL COUNTY	40	73	$375,546	0	$0	0	$0	73	$375,546
ROWAN COUNTY	15	82	$241,545	0	$0	0	$0	82	$241,545
TOWN OF SPENCER	13	12	$152,611	1	$22,387	0	$0	13	$174,998
TOWN OF ROCKWELL	1	2	$108,183	0	$0	0	$0	2	$108,183
TOWN OF GRANITE QUARRY	25	23	$48,694	2	$9,593	0	$0	25	$58,287
TOWN OF CHINA GROVE	1	0	$0	1	$34,574	0	$0	1	$34,574
CITY OF STATESVILLE	13	11	$15,223	2	$3,753	1	$2,488	14	$21,464
TOWN OF CLEVELAND	1	1	$8,574	0	$0	0	$0	1	$8,574
TOWN OF TROUTMAN	2	2	$6,793	0	$0	0	$0	2	$6,793
TOWN OF EAST SPENCER	3	3	$4,583	0	$0	0	$0	3	$4,583
TOWN OF FAITH	2	2	$1,603	0	$0	0	$0	2	$1,603
TOWN OF MOORESVILLE	0	1	$1,082	0	$0	0	$0	1	$1,082
TOWN OF LANDIS	1	0	$0	1	$724	0	$0	1	$724
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0
TOWN OF LOVE VALLEY	0	0	$0	0	$0	0	$0	0	$0

Table D- 2: River Flooding Buildings at Risk for 25 Year Flooding

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF SALISBURY	179	201	$2,435,860	14	$314,880	3	$222,185	218	$2,972,926
IREDELL COUNTY	48	91	$430,749	2	$1,575	0	$0	93	$432,324
ROWAN COUNTY	20	183	$418,337	1	$1,230	0	$0	184	$419,566
TOWN OF SPENCER	14	13	$178,369	1	$25,715	0	$0	14	$204,084
TOWN OF ROCKWELL	1	2	$147,297	0	$0	0	$0	2	$147,297

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF STATESVILLE	16	15	$41,648	3	$62,246	1	$3,157	19	$107,051
TOWN OF GRANITE QUARRY	29	27	$64,950	2	$9,955	0	$0	29	$74,905
TOWN OF CHINA GROVE	2	1	$6,665	1	$39,366	0	$0	2	$46,031
TOWN OF EAST SPENCER	4	4	$34,187	0	$0	0	$0	4	$34,187
TOWN OF CLEVELAND	1	1	$16,841	0	$0	0	$0	1	$16,841
TOWN OF TROUTMAN	2	2	$9,855	0	$0	0	$0	2	$9,855
TOWN OF LANDIS	1	0	$0	1	$7,245	0	$0	1	$7,245
TOWN OF FAITH	3	3	$2,012	0	$0	0	$0	3	$2,012
TOWN OF MOORESVILLE	0	1	$1,514	0	$0	0	$0	1	$1,514
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0
TOWN OF LOVE VALLEY	0	0	$0	0	$0	0	$0	0	$0

Table D- 3: Buildings at risk for river flooding for 50-year flooding

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF SALISBURY	207	228	$2,945,341	19	$408,374	4	$269,739	251	$3,623,454
ROWAN COUNTY	25	265	$725,580	2	$84,988	0	$0	267	$810,568
IREDELL COUNTY	56	112	$495,288	3	$38,072	1	$12,492	116	$545,851
TOWN OF SPENCER	16	15	$304,488	1	$32,197	0	$0	16	$336,685
TOWN OF ROCKWELL	1	2	$170,306	0	$0	0	$0	2	$170,306
CITY OF STATESVILLE	24	25	$87,363	4	$74,279	1	$3,349	30	$164,991
TOWN OF GRANITE QUARRY	31	30	$74,363	2	$9,955	0	$0	32	$84,318
TOWN OF CHINA GROVE	2	1	$9,627	1	$40,337	0	$0	2	$49,964
TOWN OF EAST SPENCER	4	4	$36,474	0	$0	0	$0	4	$36,474
TOWN OF CLEVELAND	1	1	$21,066	0	$0	0	$0	1	$21,066
TOWN OF TROUTMAN	2	2	$10,802	0	$0	0	$0	2	$10,802
TOWN OF LANDIS	1	0	$0	1	$10,433	0	$0	1	$10,433
TOWN OF MOORESVILLE	0	1	$3,245	0	$0	0	$0	1	$3,245
TOWN OF FAITH	3	3	$2,043	0	$0	0	$0	3	$2,043
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0
TOWN OF LOVE VALLEY	0	0	$0	0	$0	0	$0	0	$0

Table D- 4: Buildings at risk for 100-year flooding

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF SALISBURY	230	244	$4,118,823	27	$557,846	5	$305,094	276	$4,981,763
ROWAN COUNTY	29	325	$1,182,071	4	$167,490	2	$55,361	331	$1,404,922
IREDELL COUNTY	69	134	$617,599	6	$111,724	1	$25,752	141	$755,075
TOWN OF SPENCER	18	17	$465,609	1	$36,606	0	$0	18	$502,214
CITY OF STATESVILLE	33	34	$132,389	5	$90,562	1	$3,636	40	$226,587
TOWN OF ROCKWELL	1	3	$195,783	0	$0	0	$0	3	$195,783
TOWN OF GRANITE QUARRY	32	32	$92,609	2	$9,955	0	$0	34	$102,564
TOWN OF EAST SPENCER	5	5	$72,845	0	$0	0	$0	5	$72,845
TOWN OF CHINA GROVE	3	2	$11,023	1	$40,984	0	$0	3	$52,007
TOWN OF CLEVELAND	2	2	$27,103	0	$0	0	$0	2	$27,103
TOWN OF MOORESVILLE	0	2	$12,645	0	$0	0	$0	2	$12,645
TOWN OF TROUTMAN	2	2	$11,749	0	$0	0	$0	2	$11,749
TOWN OF LANDIS	1	0	$0	1	$11,302	0	$0	1	$11,302
TOWN OF FAITH	4	4	$3,131	0	$0	0	$0	4	$3,131
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0
TOWN OF LOVE VALLEY	0	0	$0	0	$0	0	$0	0	$0

Table D- 5: Buildings at risk for 500-year flooding

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	60	688	$7,700,391	10	$639,330	8	$3,393,107	706	$11,732,828
CITY OF SALISBURY	270	287	$6,200,366	34	$954,196	6	$569,436	327	$7,723,997
IREDELL COUNTY	97	165	$1,234,470	12	$585,398	1	$34,592	178	$1,854,461
CITY OF STATESVILLE	49	49	$419,573	10	$568,658	1	$4,114	60	$992,345
TOWN OF SPENCER	29	28	$866,794	1	$46,503	0	$0	29	$913,297
TOWN OF ROCKWELL	1	3	$208,233	0	$0	0	$0	3	$208,233
TOWN OF GRANITE QUARRY	34	34	$124,127	2	$10,617	0	$0	36	$134,743
TOWN OF EAST SPENCER	6	6	$128,128	0	$0	0	$0	6	$128,128
TOWN OF CLEVELAND	2	2	$61,942	0	$0	0	$0	2	$61,942
TOWN OF CHINA GROVE	3	2	$13,060	1	$43,639	0	$0	3	$56,699
TOWN OF MOORESVILLE	0	3	$31,307	0	$0	0	$0	3	$31,307

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF LANDIS	1	0	$0	1	$16,011	0	$0	1	$16,011
TOWN OF TROUTMAN	2	2	$14,387	0	$0	0	$0	2	$14,387
TOWN OF FAITH	4	4	$3,834	0	$0	0	$0	4	$3,834
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0
TOWN OF LOVE VALLEY	0	0	$0	0	$0	0	$0	0	$0

Table D- 6: High Loss Buildings in 500-year flooding

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Utilities	1	$58,388,484
CITY OF SALISBURY	Utilities	1	$4,800,000
ROWAN COUNTY	Government	6	$3,316,261
CITY OF STATESVILLE	Utilities	2	$1,498,632
CITY OF STATESVILLE	Commercial	1	$411,582
IREDELL COUNTY	Commercial	1	$248,676
CITY OF SALISBURY	Commercial	3	$103,232
ROWAN COUNTY	Residential	2	$54,648

Table D- 7: Population at risk of 500-year flooding

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
ROWAN COUNTY	282	78	1,545
CITY OF SALISBURY	147	51	828
IREDELL COUNTY	65	21	401
CITY OF STATESVILLE	21	6	128
TOWN OF GRANITE QUARRY	9	3	71
TOWN OF SPENCER	14	3	64
TOWN OF MOORESVILLE	1	1	10

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
TOWN OF EAST SPENCER	2	0	10
TOWN OF FAITH	1	0	7
TOWN OF TROUTMAN	1	0	4
TOWN OF CHINA GROVE	1	0	4
TOWN OF ROCKWELL	1	0	4
TOWN OF CLEVELAND	0	0	2
TOWN OF HARMONY	0	0	0
TOWN OF LOVE VALLEY	0	0	0
TOWN OF LANDIS	0	0	0

Table D- 8: Buildings at risk of wildfire hazards

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	6,478	11,386	$1,357,085,739	250	$130,921,629	166	$112,754,999	11,802	$1,600,762,367
ROWAN COUNTY	1,316	3,297	$439,749,134	259	$333,507,631	58	$107,767,246	3,614	$881,024,010
CITY OF STATESVILLE	801	995	$121,143,857	134	$234,802,168	29	$19,118,818	1,158	$375,064,844
TOWN OF EAST SPENCER	192	169	$34,587,845	9	$262,292,758	18	$69,852,131	196	$366,732,733
TOWN OF MOORESVILLE	315	979	$145,260,788	92	$132,728,478	28	$54,888,881	1,099	$332,878,146
TOWN OF TROUTMAN	594	503	$65,773,975	81	$109,229,663	17	$21,488,065	601	$196,491,703
CITY OF SALISBURY	113	251	$51,158,692	24	$76,338,789	10	$23,049,574	285	$150,547,054
TOWN OF ROCKWELL	232	353	$65,417,755	37	$31,275,991	10	$16,013,842	400	$112,707,588
TOWN OF CHINA GROVE	162	152	$54,956,137	11	$22,741,544	1	$2,026,066	164	$79,723,747
TOWN OF CLEVELAND	76	72	$13,512,498	0	$0	4	$6,269,900	76	$19,782,397
TOWN OF FAITH	36	113	$15,679,956	7	$2,437,202	0	$0	120	$18,117,158
TOWN OF GRANITE QUARRY	30	43	$6,412,347	4	$1,739,922	1	$5,820,436	48	$13,972,706
TOWN OF SPENCER	46	49	$5,726,214	1	$217,998	1	$569,243	51	$6,513,455
TOWN OF LANDIS	11	11	$2,041,249	0	$0	1	$1,318,439	12	$3,359,688
TOWN OF LOVE VALLEY	19	17	$613,358	1	$165,010	1	$246,419	19	$1,024,787
TOWN OF HARMONY	0	0	$0	0	$0	0	$0	0	$0

Table D- 9: Population at risk for wildfire hazards

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	4,458	1,449	27,540
ROWAN COUNTY	1,355	375	7,421
TOWN OF MOORESVILLE	427	181	3,118
CITY OF STATESVILLE	419	128	2,558
TOWN OF TROUTMAN	179	70	1,074
CITY OF SALISBURY	129	45	727
TOWN OF ROCKWELL	73	21	448
TOWN OF EAST SPENCER	70	12	289
TOWN OF CHINA GROVE	45	20	279
TOWN OF FAITH	28	10	188
TOWN OF SPENCER	24	5	112
TOWN OF GRANITE QUARRY	11	4	90
TOWN OF CLEVELAND	10	3	65
TOWN OF LANDIS	4	2	21
TOWN OF LOVE VALLEY	1	0	4
TOWN OF HARMONY	0	0	0

Table D- 10: High loss buildings at risk for wildfire hazards

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF EAST SPENCER	Commercial	1	$224,329,435
CITY OF STATESVILLE	Industrial	11	$103,011,968
TOWN OF MOORESVILLE	Commercial	13	$74,526,425
ROWAN COUNTY	Commercial	7	$67,122,914
CITY OF STATESVILLE	Commercial	12	$62,393,932
IREDELL COUNTY	Residential	33	$54,645,632
TOWN OF TROUTMAN	Industrial	4	$44,172,292
IREDELL COUNTY	Government	8	$40,644,316
TOWN OF MOORESVILLE	Government	3	$40,601,961
CITY OF SALISBURY	Commercial	3	$32,231,378
TOWN OF TROUTMAN	Commercial	8	$32,016,696
TOWN OF EAST SPENCER	Government	2	$31,193,409
TOWN OF MOORESVILLE	Industrial	2	$28,130,353
CITY OF SALISBURY	Industrial	4	$23,071,690

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Industrial	4	$20,395,228
TOWN OF CHINA GROVE	Industrial	2	$18,050,923
TOWN OF EAST SPENCER	Industrial	1	$13,467,234
ROWAN COUNTY	Religious	3	$13,367,118
TOWN OF TROUTMAN	Government	2	$13,079,065
ROWAN COUNTY	Utilities	1	$12,572,129
CITY OF SALISBURY	Residential	1	$10,717,149
IREDELL COUNTY	Commercial	5	$9,347,005
CITY OF STATESVILLE	Government	3	$6,510,928
TOWN OF MOORESVILLE	Religious	4	$6,348,472
IREDELL COUNTY	Religious	4	$5,964,064
TOWN OF GRANITE QUARRY	Government	1	$5,820,436
CITY OF SALISBURY	Religious	1	$5,282,838
TOWN OF ROCKWELL	Government	1	$4,716,672
TOWN OF MOORESVILLE	Residential	1	$4,627,797
CITY OF STATESVILLE	Religious	2	$3,946,019
TOWN OF CLEVELAND	Government	1	$3,818,669
CITY OF STATESVILLE	Residential	2	$3,018,597
TOWN OF TROUTMAN	Residential	1	$2,516,590
TOWN OF EAST SPENCER	Residential	1	$2,492,371
ROWAN COUNTY	Industrial	1	$1,887,184
TOWN OF ROCKWELL	Commercial	1	$1,422,695

Table D- 11: Buildings at risk for damage from a EF0 tornado

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$459,556,867	1,174	$39,456,187	683	$17,326,002	55,469	$516,339,056
ROWAN COUNTY	12,053	36,166	$303,041,396	2,169	$132,522,724	541	$24,918,627	38,876	$460,482,747
CITY OF SALISBURY	9,631	12,073	$120,319,372	1,446	$118,365,268	438	$17,507,815	13,957	$256,192,455
TOWN OF MOORESVILLE	5,526	12,730	$108,654,342	1,466	$89,906,754	241	$9,324,556	14,437	$207,885,651
CITY OF STATESVILLE	10,854	11,990	$89,118,819	1,837	$94,125,948	422	$9,020,757	14,249	$192,265,525
TOWN OF CHINA GROVE	2,524	2,287	$20,749,408	203	$8,083,479	56	$3,096,904	2,546	$31,929,791
TOWN OF ROCKWELL	1,704	2,208	$20,220,601	156	$10,540,377	38	$1,004,564	2,402	$31,765,542
TOWN OF GRANITE QUARRY	1,467	2,175	$19,844,178	142	$7,820,467	33	$3,625,726	2,350	$31,290,372
TOWN OF SPENCER	1,982	1,832	$16,661,795	132	$9,873,060	46	$3,548,786	2,010	$30,083,641

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF TROUTMAN	2,404	2,151	$15,881,266	229	$9,634,675	58	$1,714,149	2,438	$27,230,089
TOWN OF LANDIS	1,387	1,393	$13,578,110	112	$9,009,855	39	$3,810,332	1,544	$26,398,297
TOWN OF EAST SPENCER	1,009	945	$7,839,426	33	$13,202,226	37	$2,521,982	1,015	$23,563,635
TOWN OF FAITH	1,150	1,500	$13,277,630	76	$2,463,832	13	$552,807	1,589	$16,294,269
TOWN OF CLEVELAND	812	729	$8,694,547	58	$5,323,878	25	$1,349,447	812	$15,367,872
TOWN OF HARMONY	438	376	$2,038,933	41	$562,023	27	$416,450	444	$3,017,405
TOWN OF LOVE VALLEY	258	236	$1,128,651	21	$134,827	1	$5,134	258	$1,268,612

Table D- 12: Buildings at risk of damage from a EF1 tornado

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$3,342,664,386	1,174	$276,256,923	683	$102,331,298	55,469	$3,721,252,606
ROWAN COUNTY	12,053	36,166	$2,180,095,124	2,169	$873,834,052	541	$150,635,475	38,876	$3,204,564,650
CITY OF SALISBURY	9,631	12,073	$851,749,794	1,446	$737,711,649	438	$122,686,079	13,957	$1,712,147,522
TOWN OF MOORESVILLE	5,526	12,730	$796,788,974	1,466	$561,816,589	241	$51,021,978	14,437	$1,409,627,540
CITY OF STATESVILLE	10,854	11,990	$652,614,905	1,837	$623,797,288	422	$60,224,930	14,249	$1,336,637,123
TOWN OF ROCKWELL	1,704	2,208	$143,005,079	156	$69,871,603	38	$6,813,189	2,402	$219,689,870
TOWN OF CHINA GROVE	2,524	2,287	$146,999,100	203	$51,646,407	56	$15,800,569	2,546	$214,446,075
TOWN OF GRANITE QUARRY	1,467	2,175	$141,876,369	142	$50,235,522	33	$16,090,223	2,350	$208,202,114
TOWN OF EAST SPENCER	1,009	945	$54,185,018	33	$130,008,185	37	$14,512,275	1,015	$198,705,478
TOWN OF TROUTMAN	2,404	2,151	$115,489,741	229	$69,411,987	58	$9,205,711	2,438	$194,107,439
TOWN OF SPENCER	1,982	1,832	$117,524,408	132	$54,934,730	46	$17,860,984	2,010	$190,320,122
TOWN OF LANDIS	1,387	1,393	$96,848,919	112	$58,827,708	39	$17,744,836	1,544	$173,421,463
TOWN OF FAITH	1,150	1,500	$95,344,743	76	$15,273,440	13	$3,173,805	1,589	$113,791,988
TOWN OF CLEVELAND	812	729	$58,124,170	58	$35,176,537	25	$9,795,276	812	$103,095,983
TOWN OF HARMONY	438	376	$14,832,594	41	$3,919,607	27	$2,341,931	444	$21,094,132
TOWN OF LOVE VALLEY	258	236	$8,290,191	21	$973,196	1	$41,330	258	$9,304,716

Table D- 13: Buildings at risk of damage from a EF2 tornado

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$6,099,216,059	1,174	$617,659,285	683	$331,838,841	55,469	$7,048,714,185
ROWAN COUNTY	12,053	36,166	$4,008,918,851	2,169	$1,972,850,733	541	$493,211,842	38,876	$6,474,981,426
CITY OF SALISBURY	9,631	12,073	$1,719,711,953	1,446	$1,744,784,225	438	$424,915,227	13,957	$3,889,411,404
TOWN OF MOORESVILLE	5,526	12,730	$1,508,208,941	1,466	$1,317,766,227	241	$159,738,537	14,437	$2,985,713,706
CITY OF STATESVILLE	10,854	11,990	$1,244,167,092	1,837	$1,421,769,335	422	$205,096,401	14,249	$2,871,032,829
TOWN OF ROCKWELL	1,704	2,208	$281,637,998	156	$159,344,352	38	$23,328,067	2,402	$464,310,417
TOWN OF CHINA GROVE	2,524	2,287	$286,128,500	203	$119,972,981	56	$47,710,457	2,546	$453,811,939
TOWN OF GRANITE QUARRY	1,467	2,175	$282,476,783	142	$112,962,061	33	$44,653,399	2,350	$440,092,243
TOWN OF SPENCER	1,982	1,832	$242,639,978	132	$143,006,526	46	$53,531,834	2,010	$439,178,338
TOWN OF EAST SPENCER	1,009	945	$116,377,723	33	$252,623,083	37	$46,505,801	1,015	$415,506,608
TOWN OF TROUTMAN	2,404	2,151	$210,554,831	229	$153,475,617	58	$28,556,469	2,438	$392,586,917
TOWN OF LANDIS	1,387	1,393	$187,384,141	112	$130,788,805	39	$50,813,107	1,544	$368,986,053
TOWN OF CLEVELAND	812	729	$129,421,620	58	$81,692,018	25	$34,328,254	812	$245,441,892
TOWN OF FAITH	1,150	1,500	$183,227,282	76	$35,497,850	13	$10,160,276	1,589	$228,885,409
TOWN OF HARMONY	438	376	$27,059,303	41	$8,826,919	27	$7,428,321	444	$43,314,542
TOWN OF LOVE VALLEY	258	236	$15,510,631	21	$2,199,149	1	$149,554	258	$17,859,334

Table D- 14: Buildings at risk of damage from a EF3 tornado

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$7,058,317,828	1,174	$720,152,909	683	$519,221,681	55,469	$8,297,692,418
ROWAN COUNTY	12,053	36,166	$4,803,793,180	2,169	$2,385,219,855	541	$772,918,640	38,876	$7,961,931,676
CITY OF SALISBURY	9,631	12,073	$2,324,374,437	1,446	$2,244,389,114	438	$671,639,940	13,957	$5,240,403,490
TOWN OF MOORESVILLE	5,526	12,730	$1,785,487,869	1,466	$1,701,373,684	241	$248,512,687	14,437	$3,735,374,240
CITY OF STATESVILLE	10,854	11,990	$1,488,800,813	1,837	$1,700,432,999	422	$323,357,285	14,249	$3,512,591,096
TOWN OF SPENCER	1,982	1,832	$336,088,119	132	$194,314,152	46	$82,664,769	2,010	$613,067,040
TOWN OF ROCKWELL	1,704	2,208	$373,377,621	156	$188,086,008	38	$36,810,405	2,402	$598,274,035
TOWN OF CHINA GROVE	2,524	2,287	$374,184,774	203	$148,416,513	56	$73,771,073	2,546	$596,372,359

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF GRANITE QUARRY	1,467	2,175	$370,376,633	142	$140,264,153	33	$67,988,286	2,350	$578,629,071
TOWN OF EAST SPENCER	1,009	945	$171,656,255	33	$278,373,440	37	$72,629,594	1,015	$522,659,289
TOWN OF LANDIS	1,387	1,393	$240,479,546	112	$165,883,897	39	$77,825,055	1,544	$484,188,498
TOWN OF TROUTMAN	2,404	2,151	$243,558,176	229	$173,175,546	58	$44,358,200	2,438	$461,091,922
TOWN OF CLEVELAND	812	729	$205,522,036	58	$96,990,360	25	$54,355,115	812	$356,867,511
TOWN OF FAITH	1,150	1,500	$230,504,666	76	$44,201,749	13	$15,864,984	1,589	$290,571,398
TOWN OF HARMONY	438	376	$31,297,517	41	$10,299,300	27	$11,581,479	444	$53,178,297
TOWN OF LOVE VALLEY	258	236	$18,061,862	21	$2,357,702	1	$237,883	258	$20,657,447

Table D- 15: Buildings at risk of damage from a EF4 tornado

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$7,059,236,819	1,174	$734,489,237	683	$553,539,872	55,469	$8,347,265,928
ROWAN COUNTY	12,053	36,166	$4,845,739,122	2,169	$2,451,530,100	541	$821,792,637	38,876	$8,119,061,860
CITY OF SALISBURY	9,631	12,073	$2,399,989,659	1,446	$2,332,405,901	438	$703,490,826	13,957	$5,435,886,386
TOWN OF MOORESVILLE	5,526	12,730	$1,791,860,078	1,466	$1,764,210,479	241	$267,582,686	14,437	$3,823,653,243
CITY OF STATESVILLE	10,854	11,990	$1,497,587,067	1,837	$1,738,297,283	422	$340,195,238	14,249	$3,576,079,587
TOWN OF SPENCER	1,982	1,832	$348,522,556	132	$207,030,820	46	$90,155,504	2,010	$645,708,880
TOWN OF CHINA GROVE	2,524	2,287	$384,225,105	203	$153,355,829	56	$80,276,399	2,546	$617,857,333
TOWN OF ROCKWELL	1,704	2,208	$384,354,382	156	$192,492,728	38	$38,671,360	2,402	$615,518,470
TOWN OF GRANITE QUARRY	1,467	2,175	$380,048,720	142	$143,902,530	33	$75,960,070	2,350	$599,911,320
TOWN OF EAST SPENCER	1,009	945	$180,078,447	33	$278,658,928	37	$77,684,350	1,015	$536,421,725
TOWN OF LANDIS	1,387	1,393	$245,922,634	112	$170,557,422	39	$86,079,378	1,544	$502,559,434
TOWN OF TROUTMAN	2,404	2,151	$243,576,142	229	$175,682,861	58	$47,889,627	2,438	$467,148,631
TOWN OF CLEVELAND	812	729	$218,467,448	58	$99,408,933	25	$56,760,021	812	$374,636,402
TOWN OF FAITH	1,150	1,500	$234,686,456	76	$45,989,004	13	$16,974,028	1,589	$297,649,489
TOWN OF HARMONY	438	376	$31,297,517	41	$10,514,130	27	$12,423,805	444	$54,235,453

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF LOVE VALLEY	258	236	$18,061,862	21	$2,357,702	1	$246,419	258	$20,665,984

Table D- 16: Population at risk of EF0 tornados

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
CITY OF SALISBURY	6,224	2,175	35,069
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF SPENCER	919	193	4,204
TOWN OF TROUTMAN	761	297	4,574
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF FAITH	367	132	2,502
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97

Table D- 17: Population at risk of EF1 tornados

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97

Table D- 18: Population at risk of EF2 tornados

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97

TOWN OF LOVE VALLEY	8	3	56

Table D- 19: Population at risk of EF3 tornados

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 20: population at risk of EF4 tornados

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 21: High loss buildings at risk of EF0 tornados

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$69,826,616
CITY OF STATESVILLE	Utilities	5	$47,464,143
CITY OF SALISBURY	Commercial	111	$46,761,691
TOWN OF TROUTMAN	Utilities	1	$41,173,714
TOWN OF MOORESVILLE	Commercial	174	$41,053,364
IREDELL COUNTY	Utilities	2	$31,452,143
IREDELL COUNTY	Residential	235	$24,807,737
CITY OF STATESVILLE	Industrial	53	$20,141,856
ROWAN COUNTY	Industrial	18	$19,429,225
CITY OF STATESVILLE	Commercial	95	$19,206,839

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Industrial	32	$13,131,990
ROWAN COUNTY	Commercial	33	$11,622,631
IREDELL COUNTY	Industrial	24	$11,200,662
TOWN OF EAST SPENCER	Commercial	1	$10,117,258
ROWAN COUNTY	Government	20	$10,022,582
CITY OF SALISBURY	Industrial	32	$9,907,397
CITY OF SALISBURY	Residential	77	$8,273,227
IREDELL COUNTY	Government	27	$8,027,484
CITY OF SALISBURY	Government	35	$5,352,884
TOWN OF MOORESVILLE	Government	17	$5,331,391
IREDELL COUNTY	Commercial	34	$4,871,512
IREDELL COUNTY	Religious	24	$3,665,437
CITY OF STATESVILLE	Government	29	$3,468,914
TOWN OF SPENCER	Commercial	11	$3,226,559
TOWN OF TROUTMAN	Commercial	9	$3,113,128
TOWN OF MOORESVILLE	Residential	13	$3,112,694
TOWN OF LANDIS	Government	3	$3,037,051
TOWN OF CLEVELAND	Industrial	6	$2,964,084
TOWN OF CLEVELAND	Residential	2	$2,950,946
CITY OF SALISBURY	Utilities	1	$2,860,000
TOWN OF TROUTMAN	Industrial	5	$2,584,064
TOWN OF SPENCER	Government	4	$2,551,870
TOWN OF GRANITE QUARRY	Industrial	1	$2,479,811
ROWAN COUNTY	Residential	16	$2,405,295
CITY OF STATESVILLE	Residential	11	$2,173,893
TOWN OF CHINA GROVE	Government	2	$1,875,140
TOWN OF EAST SPENCER	Government	2	$1,536,987
CITY OF SALISBURY	Religious	14	$1,535,300
TOWN OF LANDIS	Commercial	1	$1,349,056
TOWN OF CHINA GROVE	Commercial	5	$1,330,363
CITY OF STATESVILLE	Religious	19	$1,213,013
TOWN OF TROUTMAN	Residential	3	$1,166,834
TOWN OF GRANITE QUARRY	Government	2	$1,159,727
TOWN OF CHINA GROVE	Industrial	3	$1,157,642
ROWAN COUNTY	Utilities	2	$1,144,000
TOWN OF MOORESVILLE	Religious	20	$1,005,767
TOWN OF SPENCER	Industrial	2	$908,299
TOWN OF TROUTMAN	Government	3	$865,395
TOWN OF EAST SPENCER	Industrial	1	$770,326
ROWAN COUNTY	Religious	11	$697,299
TOWN OF CLEVELAND	Religious	1	$592,758
TOWN OF ROCKWELL	Industrial	2	$556,848
TOWN OF LANDIS	Industrial	1	$498,624
TOWN OF SPENCER	Residential	2	$414,465
TOWN OF ROCKWELL	Commercial	4	$399,947
TOWN OF CLEVELAND	Commercial	2	$361,850
TOWN OF CHINA GROVE	Residential	3	$317,005
TOWN OF LANDIS	Residential	3	$253,271
TOWN OF ROCKWELL	Residential	3	$247,487
TOWN OF ROCKWELL	Government	1	$240,079
TOWN OF CLEVELAND	Government	1	$194,370
TOWN OF TROUTMAN	Religious	3	$192,978

Jurisdiction	Type	Number of Buildings	Damages
ROWAN COUNTY	Agricultural	1	$143,955
TOWN OF FAITH	Religious	2	$122,588
TOWN OF FAITH	Residential	1	$104,904
TOWN OF GRANITE QUARRY	Commercial	1	$93,701
TOWN OF ROCKWELL	Religious	1	$83,738
TOWN OF SPENCER	Religious	3	$77,467
TOWN OF EAST SPENCER	Residential	1	$67,792
TOWN OF CHINA GROVE	Religious	1	$36,632
TOWN OF LANDIS	Religious	1	$22,854

Table D- 22: High loss buildings at risk of EF1 tornados

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$504,016,583
CITY OF STATESVILLE	Utilities	5	$342,601,665
TOWN OF TROUTMAN	Utilities	1	$297,196,625
CITY OF SALISBURY	Commercial	111	$266,853,404
TOWN OF MOORESVILLE	Commercial	174	$240,998,389
IREDELL COUNTY	Utilities	2	$227,025,200
IREDELL COUNTY	Residential	235	$180,237,950
CITY OF STATESVILLE	Industrial	53	$145,386,243
ROWAN COUNTY	Industrial	18	$140,216,508
CITY OF STATESVILLE	Commercial	95	$114,302,205
TOWN OF EAST SPENCER	Commercial	1	$107,947,324
TOWN OF MOORESVILLE	Industrial	32	$94,788,218
IREDELL COUNTY	Industrial	24	$80,847,671
CITY OF SALISBURY	Industrial	32	$71,499,538
ROWAN COUNTY	Commercial	33	$60,217,275
CITY OF SALISBURY	Residential	77	$58,028,169
ROWAN COUNTY	Government	20	$46,080,151
IREDELL COUNTY	Government	27	$34,051,339
CITY OF SALISBURY	Government	35	$31,284,477
IREDELL COUNTY	Commercial	34	$30,146,362
IREDELL COUNTY	Religious	24	$29,509,005
TOWN OF MOORESVILLE	Government	17	$24,446,986
TOWN OF TROUTMAN	Commercial	9	$23,195,430
TOWN OF MOORESVILLE	Residential	13	$22,794,876
TOWN OF CLEVELAND	Industrial	6	$21,391,150
CITY OF SALISBURY	Utilities	1	$20,640,000
CITY OF STATESVILLE	Government	29	$19,114,003
TOWN OF TROUTMAN	Industrial	5	$18,652,072
TOWN OF GRANITE QUARRY	Industrial	1	$17,896,260
TOWN OF CLEVELAND	Residential	2	$17,716,527
CITY OF STATESVILLE	Residential	11	$16,056,285
TOWN OF SPENCER	Commercial	11	$16,024,813
ROWAN COUNTY	Residential	16	$15,322,314
TOWN OF LANDIS	Government	3	$12,715,040
CITY OF SALISBURY	Religious	14	$12,378,352
TOWN OF SPENCER	Government	4	$10,875,223
CITY OF STATESVILLE	Religious	19	$9,765,496
TOWN OF CHINA GROVE	Industrial	3	$8,354,449
ROWAN COUNTY	Utilities	2	$8,256,000
TOWN OF MOORESVILLE	Religious	20	$8,097,041
TOWN OF CHINA GROVE	Government	2	$7,850,539

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF LANDIS	Commercial	1	$7,717,430
TOWN OF TROUTMAN	Residential	3	$7,688,274
TOWN OF CHINA GROVE	Commercial	5	$7,004,313
TOWN OF EAST SPENCER	Government	2	$6,570,758
TOWN OF SPENCER	Industrial	2	$6,554,997
ROWAN COUNTY	Religious	11	$5,621,977
TOWN OF EAST SPENCER	Industrial	1	$5,559,274
TOWN OF GRANITE QUARRY	Government	2	$4,855,359
TOWN OF CLEVELAND	Religious	1	$4,779,108
TOWN OF ROCKWELL	Industrial	2	$4,018,651
TOWN OF TROUTMAN	Government	3	$3,622,164
TOWN OF LANDIS	Industrial	1	$3,598,463
TOWN OF SPENCER	Residential	2	$2,702,301
TOWN OF CHINA GROVE	Residential	3	$2,157,328
TOWN OF ROCKWELL	Commercial	4	$2,045,910
TOWN OF LANDIS	Residential	3	$1,732,380
TOWN OF CLEVELAND	Commercial	2	$1,722,584
TOWN OF TROUTMAN	Religious	3	$1,553,591
TOWN OF ROCKWELL	Residential	3	$1,485,832
TOWN OF ROCKWELL	Government	1	$1,005,123
TOWN OF FAITH	Religious	2	$988,365
ROWAN COUNTY	Agricultural	1	$927,134
TOWN OF CLEVELAND	Government	1	$813,758
TOWN OF ROCKWELL	Religious	1	$675,134
TOWN OF FAITH	Residential	1	$629,811
TOWN OF SPENCER	Religious	3	$624,574
TOWN OF GRANITE QUARRY	Commercial	1	$446,064
TOWN OF EAST SPENCER	Residential	1	$407,004
TOWN OF CHINA GROVE	Religious	1	$295,347
TOWN OF LANDIS	Religious	1	$184,258

Table D- 23: High loss buildings at risk of EF2 tornados

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$1,138,935,498
CITY OF STATESVILLE	Utilities	5	$774,183,255
CITY OF SALISBURY	Commercial	111	$698,428,375
TOWN OF TROUTMAN	Utilities	1	$671,580,655
TOWN OF MOORESVILLE	Commercial	174	$587,062,161
IREDELL COUNTY	Utilities	2	$513,013,000
CITY OF STATESVILLE	Industrial	53	$328,531,954
IREDELL COUNTY	Residential	235	$327,690,556
ROWAN COUNTY	Industrial	18	$316,845,830
CITY OF STATESVILLE	Commercial	95	$271,490,995
TOWN OF MOORESVILLE	Industrial	32	$214,194,671
TOWN OF EAST SPENCER	Commercial	1	$203,040,572
IREDELL COUNTY	Industrial	24	$182,692,963
ROWAN COUNTY	Commercial	33	$171,434,651
CITY OF SALISBURY	Industrial	32	$161,566,786
CITY OF SALISBURY	Residential	77	$141,444,737
ROWAN COUNTY	Government	20	$130,887,783
IREDELL COUNTY	Religious	24	$106,780,310
CITY OF SALISBURY	Government	35	$100,951,817
IREDELL COUNTY	Government	27	$91,572,258

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Commercial	34	$70,020,050
TOWN OF MOORESVILLE	Government	17	$69,342,585
CITY OF STATESVILLE	Government	29	$60,044,017
TOWN OF CLEVELAND	Residential	2	$49,829,768
TOWN OF TROUTMAN	Commercial	9	$48,411,871
TOWN OF CLEVELAND	Industrial	6	$48,337,365
TOWN OF SPENCER	Commercial	11	$47,788,249
CITY OF SALISBURY	Utilities	1	$46,640,000
CITY OF SALISBURY	Religious	14	$44,796,792
TOWN OF MOORESVILLE	Residential	13	$44,705,220
TOWN OF TROUTMAN	Industrial	5	$42,148,429
TOWN OF GRANITE QUARRY	Industrial	1	$40,439,999
ROWAN COUNTY	Residential	16	$37,734,644
CITY OF STATESVILLE	Religious	19	$35,337,102
TOWN OF LANDIS	Government	3	$33,855,061
CITY OF STATESVILLE	Residential	11	$30,466,807
TOWN OF SPENCER	Government	4	$29,337,257
TOWN OF MOORESVILLE	Religious	20	$29,299,686
TOWN OF CHINA GROVE	Government	2	$20,902,843
ROWAN COUNTY	Religious	11	$20,345,724
TOWN OF CHINA GROVE	Commercial	5	$20,035,383
TOWN OF CHINA GROVE	Industrial	3	$18,878,464
ROWAN COUNTY	Utilities	2	$18,656,000
TOWN OF EAST SPENCER	Government	2	$17,765,749
TOWN OF CLEVELAND	Religious	1	$17,295,411
TOWN OF LANDIS	Commercial	1	$16,591,564
TOWN OF SPENCER	Industrial	2	$14,812,261
TOWN OF GRANITE QUARRY	Government	2	$12,927,878
TOWN OF EAST SPENCER	Industrial	1	$12,562,236
TOWN OF TROUTMAN	Residential	3	$10,139,069
TOWN OF TROUTMAN	Government	3	$9,645,198
TOWN OF ROCKWELL	Industrial	2	$9,080,904
TOWN OF LANDIS	Industrial	1	$8,131,411
TOWN OF SPENCER	Residential	2	$6,557,829
TOWN OF ROCKWELL	Commercial	4	$5,688,157
TOWN OF TROUTMAN	Religious	3	$5,621,773
TOWN OF CLEVELAND	Commercial	2	$5,554,618
TOWN OF ROCKWELL	Residential	3	$4,179,074
TOWN OF LANDIS	Residential	3	$3,840,345
TOWN OF CHINA GROVE	Residential	3	$3,592,019
TOWN OF FAITH	Religious	2	$3,576,856
TOWN OF ROCKWELL	Government	1	$2,676,240
TOWN OF ROCKWELL	Religious	1	$2,443,285
TOWN OF SPENCER	Religious	3	$2,260,310
TOWN OF CLEVELAND	Government	1	$2,166,713
TOWN OF FAITH	Residential	1	$1,771,417
TOWN OF GRANITE QUARRY	Commercial	1	$1,438,371
TOWN OF EAST SPENCER	Residential	1	$1,144,746
ROWAN COUNTY	Agricultural	1	$1,098,890
TOWN OF CHINA GROVE	Religious	1	$1,068,848
TOWN OF LANDIS	Religious	1	$666,822
TOWN OF MOORESVILLE	Utilities	3	$504,016,583

Table D- 24: high loss buildings at risk of EF3 tornados

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$1,221,050,000
CITY OF SALISBURY	Commercial	111	$981,801,881
TOWN OF MOORESVILLE	Commercial	174	$830,741,258
CITY OF STATESVILLE	Utilities	5	$830,000,000
TOWN OF TROUTMAN	Utilities	1	$720,000,000
IREDELL COUNTY	Utilities	2	$550,000,000
IREDELL COUNTY	Residential	235	$378,662,825
CITY OF STATESVILLE	Commercial	95	$365,842,391
CITY OF STATESVILLE	Industrial	53	$352,218,315
ROWAN COUNTY	Industrial	18	$339,671,774
ROWAN COUNTY	Commercial	33	$246,818,633
TOWN OF MOORESVILLE	Industrial	32	$229,637,590
TOWN OF EAST SPENCER	Commercial	1	$224,239,703
CITY OF SALISBURY	Residential	77	$217,725,417
ROWAN COUNTY	Government	20	$200,165,437
IREDELL COUNTY	Industrial	24	$195,864,685
CITY OF SALISBURY	Industrial	32	$173,206,246
IREDELL COUNTY	Religious	24	$169,845,950
CITY OF SALISBURY	Government	35	$157,836,327
IREDELL COUNTY	Government	27	$138,574,645
TOWN OF MOORESVILLE	Government	17	$106,018,469
TOWN OF CLEVELAND	Residential	2	$98,932,648
CITY OF STATESVILLE	Government	29	$93,465,597
IREDELL COUNTY	Commercial	34	$93,075,061
CITY OF SALISBURY	Religious	14	$71,258,565
TOWN OF SPENCER	Commercial	11	$69,485,371
ROWAN COUNTY	Residential	16	$67,121,511
CITY OF STATESVILLE	Religious	19	$56,207,587
TOWN OF TROUTMAN	Commercial	9	$55,469,939
TOWN OF MOORESVILLE	Residential	13	$54,983,819
TOWN OF CLEVELAND	Industrial	6	$51,819,645
TOWN OF LANDIS	Government	3	$51,128,660
CITY OF SALISBURY	Utilities	1	$50,000,000
TOWN OF MOORESVILLE	Religious	20	$46,604,407
TOWN OF TROUTMAN	Industrial	5	$45,187,229
TOWN OF SPENCER	Government	4	$44,421,777
TOWN OF GRANITE QUARRY	Industrial	1	$43,353,344
CITY OF STATESVILLE	Residential	11	$35,608,981
ROWAN COUNTY	Religious	11	$32,364,083
TOWN OF CHINA GROVE	Government	2	$31,567,934
TOWN OF CHINA GROVE	Commercial	5	$28,040,979
TOWN OF CLEVELAND	Religious	1	$27,511,930
TOWN OF EAST SPENCER	Government	2	$26,912,595
TOWN OF LANDIS	Commercial	1	$24,412,967
TOWN OF CHINA GROVE	Industrial	3	$20,238,491
ROWAN COUNTY	Utilities	2	$20,000,000
TOWN OF GRANITE QUARRY	Government	2	$19,523,966
TOWN OF SPENCER	Industrial	2	$15,879,354
TOWN OF TROUTMAN	Government	3	$14,567,096
TOWN OF EAST SPENCER	Industrial	1	$13,467,234
TOWN OF SPENCER	Residential	2	$11,254,265
TOWN OF TROUTMAN	Residential	3	$10,502,482

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF ROCKWELL	Industrial	2	$9,735,103
TOWN OF TROUTMAN	Religious	3	$8,942,054
TOWN OF LANDIS	Industrial	1	$8,717,207
TOWN OF ROCKWELL	Commercial	4	$8,331,792
TOWN OF ROCKWELL	Residential	3	$8,297,187
TOWN OF CLEVELAND	Commercial	2	$8,118,838
TOWN OF LANDIS	Residential	3	$5,876,765
TOWN OF FAITH	Religious	2	$5,689,729
TOWN OF CHINA GROVE	Residential	3	$4,428,222
TOWN OF ROCKWELL	Government	1	$4,041,717
TOWN OF ROCKWELL	Religious	1	$3,886,549
TOWN OF SPENCER	Religious	3	$3,595,491
TOWN OF FAITH	Residential	1	$3,516,993
TOWN OF CLEVELAND	Government	1	$3,272,218
TOWN OF EAST SPENCER	Residential	1	$2,272,793
TOWN OF GRANITE QUARRY	Commercial	1	$2,102,377
TOWN OF CHINA GROVE	Religious	1	$1,700,224
ROWAN COUNTY	Agricultural	1	$1,098,890
TOWN OF LANDIS	Religious	1	$1,060,719
TOWN OF MOORESVILLE	Utilities	3	$1,138,935,498

Table D- 25: Number of high loss buildings at risk of EF4 tornados

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$1,221,050,000
CITY OF SALISBURY	Commercial	111	$1,039,717,166
TOWN OF MOORESVILLE	Commercial	174	$872,981,580
CITY OF STATESVILLE	Utilities	5	$830,000,000
TOWN OF TROUTMAN	Utilities	1	$720,000,000
IREDELL COUNTY	Utilities	2	$550,000,000
CITY OF STATESVILLE	Commercial	95	$381,285,465
IREDELL COUNTY	Residential	235	$378,662,825
CITY OF STATESVILLE	Industrial	53	$352,218,315
ROWAN COUNTY	Industrial	18	$339,671,774
ROWAN COUNTY	Commercial	33	$267,076,458
TOWN OF MOORESVILLE	Industrial	32	$229,637,590
CITY OF SALISBURY	Residential	77	$228,536,066
TOWN OF EAST SPENCER	Commercial	1	$224,329,435
ROWAN COUNTY	Government	20	$221,965,262
IREDELL COUNTY	Industrial	24	$195,864,685
IREDELL COUNTY	Religious	24	$175,940,972
CITY OF SALISBURY	Industrial	32	$173,206,246
CITY OF SALISBURY	Government	35	$168,493,789
IREDELL COUNTY	Government	27	$156,455,639
TOWN OF MOORESVILLE	Government	17	$117,622,395
TOWN OF CLEVELAND	Residential	2	$108,490,677
CITY OF STATESVILLE	Government	29	$100,540,309
IREDELL COUNTY	Commercial	34	$97,608,069
TOWN OF SPENCER	Commercial	11	$75,621,799
CITY OF SALISBURY	Religious	14	$73,812,477
ROWAN COUNTY	Residential	16	$72,569,394
CITY OF STATESVILLE	Religious	19	$58,224,630
TOWN OF LANDIS	Government	3	$57,918,766
TOWN OF TROUTMAN	Commercial	9	$56,556,477

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Residential	13	$55,576,494
TOWN OF CLEVELAND	Industrial	6	$51,819,645
TOWN OF SPENCER	Government	4	$50,098,867
CITY OF SALISBURY	Utilities	1	$50,000,000
TOWN OF MOORESVILLE	Religious	20	$48,276,833
TOWN OF TROUTMAN	Industrial	5	$45,187,229
TOWN OF GRANITE QUARRY	Industrial	1	$43,353,344
TOWN OF CHINA GROVE	Government	2	$35,760,292
CITY OF STATESVILLE	Residential	11	$35,608,981
ROWAN COUNTY	Religious	11	$33,524,014
TOWN OF EAST SPENCER	Government	2	$30,328,851
TOWN OF CHINA GROVE	Commercial	5	$30,242,707
TOWN OF CLEVELAND	Religious	1	$28,497,959
TOWN OF LANDIS	Commercial	1	$25,452,701
TOWN OF GRANITE QUARRY	Government	2	$22,116,833
TOWN OF CHINA GROVE	Industrial	3	$20,238,491
ROWAN COUNTY	Utilities	2	$20,000,000
TOWN OF TROUTMAN	Government	3	$16,501,959
TOWN OF SPENCER	Industrial	2	$15,879,354
TOWN OF EAST SPENCER	Industrial	1	$13,467,234
TOWN OF SPENCER	Residential	2	$12,097,409
TOWN OF TROUTMAN	Residential	3	$10,502,482
TOWN OF ROCKWELL	Industrial	2	$9,735,103
TOWN OF TROUTMAN	Religious	3	$9,262,945
TOWN OF ROCKWELL	Residential	3	$9,098,790
TOWN OF ROCKWELL	Commercial	4	$8,995,980
TOWN OF CLEVELAND	Commercial	2	$8,908,653
TOWN OF LANDIS	Industrial	1	$8,717,207
TOWN OF LANDIS	Residential	3	$6,202,847
TOWN OF FAITH	Religious	2	$5,893,650
TOWN OF ROCKWELL	Government	1	$4,578,474
TOWN OF CHINA GROVE	Residential	3	$4,530,242
TOWN OF ROCKWELL	Religious	1	$4,025,844
TOWN OF FAITH	Residential	1	$3,856,774
TOWN OF SPENCER	Religious	3	$3,724,353
TOWN OF CLEVELAND	Government	1	$3,706,782
TOWN OF EAST SPENCER	Residential	1	$2,492,371
TOWN OF GRANITE QUARRY	Commercial	1	$2,306,900
TOWN OF CHINA GROVE	Religious	1	$1,761,160
ROWAN COUNTY	Agricultural	1	$1,098,890
TOWN OF LANDIS	Religious	1	$1,098,735

Table D- 26: Buildings at risk of 250-year earthquake damages

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$1,346,010	1,174	$429,067	683	$223,634	55,469	$1,998,711
ROWAN COUNTY	12,053	36,166	$650,948	2,168	$961,735	541	$227,856	38,875	$1,840,539
CITY OF SALISBURY	9,631	12,073	$326,103	1,446	$1,062,484	438	$230,633	13,957	$1,619,220
CITY OF STATESVILLE	10,854	11,990	$354,610	1,837	$1,062,391	422	$131,567	14,249	$1,548,568
TOWN OF MOORESVILLE	5,526	12,730	$329,790	1,466	$954,091	241	$105,795	14,437	$1,389,676
TOWN OF TROUTMAN	2,404	2,151	$54,382	229	$117,361	58	$20,990	2,438	$192,734
TOWN OF CHINA GROVE	2,524	2,287	$58,600	203	$77,040	56	$26,107	2,546	$161,747
TOWN OF SPENCER	1,982	1,832	$45,714	132	$75,565	46	$26,625	2,010	$147,904
TOWN OF ROCKWELL	1,704	2,208	$53,321	156	$78,501	38	$15,276	2,402	$147,097
TOWN OF GRANITE QUARRY	1,467	2,175	$51,413	142	$75,503	33	$10,357	2,350	$137,273
TOWN OF LANDIS	1,387	1,393	$37,646	112	$65,547	39	$26,862	1,544	$130,055
TOWN OF EAST SPENCER	1,009	945	$25,598	33	$79,473	37	$22,250	1,015	$127,321
TOWN OF CLEVELAND	812	729	$28,400	58	$53,895	25	$18,271	812	$100,566
TOWN OF FAITH	1,150	1,500	$32,654	76	$16,812	13	$3,568	1,589	$53,034
TOWN OF HARMONY	438	376	$6,477	41	$4,989	27	$5,215	444	$16,681
TOWN OF LOVE VALLEY	258	236	$2,983	21	$908	1	$120	258	$4,011

Table D- 27: Buildings at risk for a 500-year earthquake events

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$8,325,481	1,174	$1,844,267	683	$1,134,020	55,469	$11,303,769
ROWAN COUNTY	12,053	36,166	$4,409,802	2,169	$5,232,663	541	$1,388,091	38,876	$11,030,556

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
CITY OF SALISBURY	9,631	12,073	$2,266,041	1,446	$5,359,372	438	$1,316,490	13,957	$8,941,903
CITY OF STATESVILLE	10,854	11,990	$1,925,064	1,837	$4,826,535	422	$683,734	14,249	$7,435,333
TOWN OF MOORESVILLE	5,526	12,730	$2,067,344	1,466	$4,414,001	241	$536,214	14,437	$7,017,559
TOWN OF SPENCER	1,982	1,832	$325,691	132	$464,169	46	$162,155	2,010	$952,015
TOWN OF ROCKWELL	1,704	2,208	$383,627	156	$472,828	38	$85,895	2,402	$942,350
TOWN OF CHINA GROVE	2,524	2,287	$390,880	203	$380,612	56	$154,538	2,546	$926,030
TOWN OF TROUTMAN	2,404	2,151	$302,627	229	$511,471	58	$103,806	2,438	$917,904
TOWN OF EAST SPENCER	1,009	945	$182,459	33	$530,328	37	$140,371	1,015	$853,158
TOWN OF GRANITE QUARRY	1,467	2,175	$360,564	142	$346,071	33	$83,784	2,350	$790,419
TOWN OF LANDIS	1,387	1,393	$248,474	112	$374,502	39	$158,958	1,544	$781,934
TOWN OF CLEVELAND	812	729	$207,056	58	$255,600	25	$100,015	812	$562,671
TOWN OF FAITH	1,150	1,500	$221,118	76	$113,303	13	$24,680	1,589	$359,101
TOWN OF HARMONY	438	376	$35,621	41	$26,410	27	$25,953	444	$87,985
TOWN OF LOVE VALLEY	258	236	$14,544	21	$4,423	1	$573	258	$19,540

Table D- 28: Buildings at risk of damage from 750 year earthquake damages

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$20,255,744	1,174	$3,574,715	683	$2,604,218	55,469	$26,434,677
ROWAN COUNTY	12,053	36,166	$11,202,232	2,169	$10,850,817	541	$3,078,693	38,876	$25,131,742
CITY OF SALISBURY	9,631	12,073	$5,835,180	1,446	$11,467,250	438	$2,972,647	13,957	$20,275,078
CITY OF STATESVILLE	10,854	11,990	$4,725,426	1,837	$10,014,159	422	$1,584,936	14,249	$16,324,520
TOWN OF MOORESVILLE	5,526	12,730	$5,202,645	1,466	$9,695,075	241	$1,180,180	14,437	$16,077,900
TOWN OF ROCKWELL	1,704	2,208	$1,010,537	156	$1,001,754	38	$207,863	2,402	$2,220,153

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF CHINA GROVE	2,524	2,287	$1,024,976	203	$811,691	56	$367,917	2,546	$2,204,583
TOWN OF SPENCER	1,982	1,832	$839,605	132	$994,938	46	$366,071	2,010	$2,200,614
TOWN OF TROUTMAN	2,404	2,151	$747,114	229	$1,033,613	58	$235,067	2,438	$2,015,794
TOWN OF GRANITE QUARRY	1,467	2,175	$934,540	142	$723,161	33	$185,373	2,350	$1,843,074
TOWN OF LANDIS	1,387	1,393	$654,984	112	$796,050	39	$377,164	1,544	$1,828,197
TOWN OF EAST SPENCER	1,009	945	$466,503	33	$933,985	37	$324,255	1,015	$1,724,743
TOWN OF CLEVELAND	812	729	$537,636	58	$498,453	25	$228,919	812	$1,265,008
TOWN OF FAITH	1,150	1,500	$579,745	76	$245,605	13	$61,047	1,589	$886,397
TOWN OF HARMONY	438	376	$84,749	41	$57,589	27	$57,527	444	$199,865
TOWN OF LOVE VALLEY	258	236	$34,006	21	$9,179	1	$1,367	258	$44,552

Table D- 29: Buildings at risk of 1000 year earthquake events

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$29,388,234	1,174	$4,819,630	683	$3,698,216	55,469	$37,906,080
ROWAN COUNTY	12,053	36,166	$16,416,719	2,169	$15,577,891	541	$4,469,675	38,876	$36,464,285
CITY OF SALISBURY	9,631	12,073	$8,476,450	1,446	$16,915,448	438	$4,358,545	13,957	$29,750,443
TOWN OF MOORESVILLE	5,526	12,730	$7,771,936	1,466	$13,793,646	241	$1,667,568	14,437	$23,233,151
CITY OF STATESVILLE	10,854	11,990	$6,648,366	1,837	$13,491,705	422	$2,199,303	14,249	$22,339,374
TOWN OF ROCKWELL	1,704	2,208	$1,521,454	156	$1,534,298	38	$310,155	2,402	$3,365,908
TOWN OF SPENCER	1,982	1,832	$1,240,972	132	$1,526,705	46	$532,643	2,010	$3,300,320
TOWN OF CHINA GROVE	2,524	2,287	$1,554,301	203	$1,206,865	56	$534,236	2,546	$3,295,402
TOWN OF TROUTMAN	2,404	2,151	$1,043,979	229	$1,383,254	58	$325,121	2,438	$2,752,354
TOWN OF GRANITE QUARRY	1,467	2,175	$1,348,808	142	$1,090,472	33	$292,952	2,350	$2,732,233
TOWN OF LANDIS	1,387	1,393	$1,008,329	112	$1,163,839	39	$550,340	1,544	$2,722,509

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF EAST SPENCER	1,009	945	$686,004	33	$1,436,631	37	$502,676	1,015	$2,625,311
TOWN OF CLEVELAND	812	729	$772,898	58	$651,511	25	$308,805	812	$1,733,213
TOWN OF FAITH	1,150	1,500	$853,225	76	$393,542	13	$88,089	1,589	$1,334,856
TOWN OF HARMONY	438	376	$122,889	41	$82,761	27	$82,259	444	$287,909
TOWN OF LOVE VALLEY	258	236	$48,172	21	$12,401	1	$1,941	258	$62,514

Table D- 30: Buildings at risk of 1500 year earthquake events

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$56,909,689	1,174	$8,233,312	683	$6,816,158	55,469	$71,959,159
ROWAN COUNTY	12,053	36,166	$33,654,651	2,169	$26,962,129	541	$8,088,703	38,876	$68,705,484
CITY OF SALISBURY	9,631	12,073	$17,754,964	1,446	$31,819,011	438	$8,319,798	13,957	$57,893,774
TOWN OF MOORESVILLE	5,526	12,730	$15,089,519	1,466	$24,363,508	241	$3,083,621	14,437	$42,536,648
CITY OF STATESVILLE	10,854	11,990	$13,201,998	1,837	$24,346,032	422	$4,159,774	14,249	$41,707,804
TOWN OF ROCKWELL	1,704	2,208	$3,183,948	156	$2,809,918	38	$570,394	2,402	$6,564,260
TOWN OF CHINA GROVE	2,524	2,287	$3,266,008	203	$2,205,632	56	$1,051,605	2,546	$6,523,245
TOWN OF SPENCER	1,982	1,832	$2,573,066	132	$2,917,467	46	$1,025,592	2,010	$6,516,125
TOWN OF LANDIS	1,387	1,393	$2,105,605	112	$2,129,949	39	$1,036,804	1,544	$5,272,359
TOWN OF TROUTMAN	2,404	2,151	$2,117,752	229	$2,490,400	58	$625,325	2,438	$5,233,477
TOWN OF GRANITE QUARRY	1,467	2,175	$2,841,360	142	$1,841,753	33	$533,579	2,350	$5,216,692
TOWN OF EAST SPENCER	1,009	945	$1,415,401	33	$2,157,344	37	$908,610	1,015	$4,481,355
TOWN OF CLEVELAND	812	729	$1,588,626	58	$1,068,284	25	$521,857	812	$3,178,767
TOWN OF FAITH	1,150	1,500	$1,857,650	76	$686,860	13	$180,639	1,589	$2,725,149
TOWN OF HARMONY	438	376	$237,981	41	$151,229	27	$149,774	444	$538,984
TOWN OF LOVE VALLEY	258	236	$103,190	21	$23,883	1	$3,645	258	$130,718

Table D- 31: Buildings at risk of 2000 year earthquakes

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,875	53,612	$74,947,315	1,174	$11,009,797	683	$8,920,257	55,469	$94,877,368
ROWAN COUNTY	12,053	36,166	$45,006,331	2,169	$37,388,725	541	$11,184,023	38,876	$93,579,079
CITY OF SALISBURY	9,631	12,073	$23,964,830	1,446	$45,904,269	438	$11,817,657	13,957	$81,686,756
CITY OF STATESVILLE	10,854	11,990	$17,588,931	1,837	$32,224,411	422	$5,432,333	14,249	$55,245,675
TOWN OF MOORESVILLE	5,526	12,730	$19,533,497	1,466	$31,490,821	241	$4,068,269	14,437	$55,092,588
TOWN OF SPENCER	1,982	1,832	$3,515,524	132	$4,343,146	46	$1,463,837	2,010	$9,322,507
TOWN OF ROCKWELL	1,704	2,208	$4,229,831	156	$4,029,931	38	$765,920	2,402	$9,025,682
TOWN OF CHINA GROVE	2,524	2,287	$4,351,137	203	$3,098,547	56	$1,402,086	2,546	$8,851,770
TOWN OF GRANITE QUARRY	1,467	2,175	$3,778,275	142	$2,656,261	33	$790,582	2,350	$7,225,118
TOWN OF LANDIS	1,387	1,393	$2,800,568	112	$2,936,377	39	$1,344,174	1,544	$7,081,119
TOWN OF TROUTMAN	2,404	2,151	$2,825,733	229	$3,221,677	58	$830,842	2,438	$6,878,253
TOWN OF EAST SPENCER	1,009	945	$1,926,665	33	$3,262,010	37	$1,273,605	1,015	$6,462,281
TOWN OF CLEVELAND	812	729	$2,139,173	58	$1,384,597	25	$664,254	812	$4,188,024
TOWN OF FAITH	1,150	1,500	$2,505,498	76	$1,008,285	13	$236,413	1,589	$3,750,196
TOWN OF HARMONY	438	376	$329,253	41	$201,399	27	$200,523	444	$731,175
TOWN OF LOVE VALLEY	258	236	$150,064	21	$34,100	1	$4,703	258	$188,867

Table D- 32: Buildings at risk of 2500 year earthquakes

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$60,559,541	2,169	$49,852,020	541	$14,921,364	38,876	$125,332,925
IREDELL COUNTY	25,875	53,612	$98,643,180	1,174	$14,575,885	683	$11,290,790	55,469	$124,509,856
CITY OF SALISBURY	9,631	12,073	$31,378,239	1,446	$60,176,716	438	$15,916,865	13,957	$107,471,820
TOWN OF MOORESVILLE	5,526	12,730	$27,313,287	1,466	$42,199,005	241	$5,925,111	14,437	$75,437,403
CITY OF STATESVILLE	10,854	11,990	$22,564,312	1,837	$41,351,685	422	$6,969,641	14,249	$70,885,639
TOWN OF SPENCER	1,982	1,832	$4,519,912	132	$5,920,424	46	$2,037,953	2,010	$12,478,289
TOWN OF ROCKWELL	1,704	2,208	$5,844,635	156	$5,334,935	38	$1,059,010	2,402	$12,238,580

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF CHINA GROVE	2,524	2,287	$5,941,004	203	$4,167,168	56	$1,963,658	2,546	$12,071,830
TOWN OF LANDIS	1,387	1,393	$3,855,605	112	$4,384,569	39	$1,878,635	1,544	$10,118,809
TOWN OF GRANITE QUARRY	1,467	2,175	$5,099,701	142	$3,444,764	33	$1,086,831	2,350	$9,631,296
TOWN OF TROUTMAN	2,404	2,151	$3,755,402	229	$4,251,124	58	$1,128,339	2,438	$9,134,866
TOWN OF EAST SPENCER	1,009	945	$2,489,023	33	$4,090,532	37	$1,622,633	1,015	$8,202,187
TOWN OF CLEVELAND	812	729	$2,724,146	58	$1,758,467	25	$833,889	812	$5,316,501
TOWN OF FAITH	1,150	1,500	$3,405,627	76	$1,310,950	13	$309,021	1,589	$5,025,598
TOWN OF HARMONY	438	376	$395,087	41	$239,406	27	$238,886	444	$873,379
TOWN OF LOVE VALLEY	258	236	$201,209	21	$47,048	1	$5,674	258	$253,931

Table D- 33: Population at risk of 250-year earthquakes

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 34: Population at risk of 500 year earthquakes

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 35: Population at risk of 750 year earthquakes

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 36: Population at risk of 1000, 1500, 200, and 2500-year earthquakes

Jurisdiction	Elderly at Risk	Children at Risk	Total at Risk
IREDELL COUNTY	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273
TOWN OF MOORESVILLE	5,553	2,355	40,540
CITY OF SALISBURY	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109
TOWN OF TROUTMAN	761	297	4,574
TOWN OF GRANITE QUARRY	546	213	4,543
TOWN OF SPENCER	919	193	4,204
TOWN OF CHINA GROVE	682	304	4,198
TOWN OF ROCKWELL	453	132	2,788
TOWN OF LANDIS	452	215	2,653
TOWN OF FAITH	367	132	2,502
TOWN OF EAST SPENCER	392	66	1,622
TOWN OF CLEVELAND	101	33	665
TOWN OF HARMONY	17	4	97
TOWN OF LOVE VALLEY	8	3	56

Table D- 37: High loss buildings at risk of 250 year earthquakes

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$1,336,589
CITY OF STATESVILLE	Utilities	5	$884,850
TOWN OF TROUTMAN	Utilities	1	$787,680
CITY OF SALISBURY	Commercial	111	$418,463
TOWN OF MOORESVILLE	Commercial	174	$417,694
IREDELL COUNTY	Utilities	2	$377,900
CITY OF STATESVILLE	Industrial	53	$290,033
ROWAN COUNTY	Industrial	18	$187,966
TOWN OF MOORESVILLE	Industrial	32	$168,298
CITY OF STATESVILLE	Commercial	95	$165,362
IREDELL COUNTY	Industrial	24	$129,171
CITY OF SALISBURY	Industrial	32	$127,625
ROWAN COUNTY	Commercial	33	$84,147
IREDELL COUNTY	Religious	24	$76,578
IREDELL COUNTY	Residential	235	$63,421
ROWAN COUNTY	Government	20	$63,060
IREDELL COUNTY	Government	27	$53,576
CITY OF SALISBURY	Government	35	$53,035
CITY OF SALISBURY	Utilities	1	$48,700
CITY OF SALISBURY	Residential	77	$47,573
TOWN OF EAST SPENCER	Commercial	1	$44,417
TOWN OF GRANITE QUARRY	Industrial	1	$44,090
TOWN OF TROUTMAN	Industrial	5	$42,850
TOWN OF MOORESVILLE	Government	17	$39,569
IREDELL COUNTY	Commercial	34	$38,580
CITY OF STATESVILLE	Government	29	$35,362
TOWN OF CLEVELAND	Industrial	6	$34,654
TOWN OF SPENCER	Commercial	11	$24,984

Jurisdiction	Type	Number of Buildings	Damages
CITY OF STATESVILLE	Religious	19	$24,252
TOWN OF MOORESVILLE	Religious	20	$23,859
TOWN OF TROUTMAN	Commercial	9	$23,685
CITY OF SALISBURY	Religious	14	$22,781
ROWAN COUNTY	Utilities	2	$19,760
TOWN OF LANDIS	Government	3	$15,669
TOWN OF CHINA GROVE	Industrial	3	$14,245
TOWN OF SPENCER	Government	4	$13,683
TOWN OF MOORESVILLE	Residential	13	$13,563
TOWN OF EAST SPENCER	Industrial	1	$13,521
ROWAN COUNTY	Residential	16	$13,175
TOWN OF CHINA GROVE	Government	2	$12,301
TOWN OF CLEVELAND	Residential	2	$11,717
TOWN OF CLEVELAND	Religious	1	$9,746
ROWAN COUNTY	Religious	11	$8,566
TOWN OF CHINA GROVE	Commercial	5	$8,402
TOWN OF LANDIS	Commercial	1	$8,110
TOWN OF SPENCER	Industrial	2	$7,948
TOWN OF GRANITE QUARRY	Government	2	$6,694
TOWN OF TROUTMAN	Government	3	$5,427
TOWN OF ROCKWELL	Industrial	2	$4,731
TOWN OF TROUTMAN	Religious	3	$4,689
TOWN OF ROCKWELL	Commercial	4	$4,635
TOWN OF EAST SPENCER	Government	2	$4,516
TOWN OF LANDIS	Industrial	1	$4,489
CITY OF STATESVILLE	Residential	11	$4,439
TOWN OF TROUTMAN	Residential	3	$4,328
TOWN OF CLEVELAND	Commercial	2	$2,922
TOWN OF ROCKWELL	Government	1	$2,863
TOWN OF SPENCER	Religious	3	$1,509
TOWN OF ROCKWELL	Residential	3	$1,273
TOWN OF LANDIS	Residential	3	$1,244
TOWN OF SPENCER	Residential	2	$1,040
TOWN OF CLEVELAND	Government	1	$1,023
TOWN OF GRANITE QUARRY	Commercial	1	$967
TOWN OF FAITH	Residential	1	$953
TOWN OF CHINA GROVE	Residential	3	$938
TOWN OF CHINA GROVE	Religious	1	$800
TOWN OF FAITH	Religious	2	$554
TOWN OF LANDIS	Religious	1	$430
TOWN OF ROCKWELL	Religious	1	$374
ROWAN COUNTY	Agricultural	1	$322
TOWN OF EAST SPENCER	Residential	1	$219

Table D- 38: High loss properties at risk of 500-year earthquakes

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$3,728,133
CITY OF STATESVILLE	Utilities	5	$2,474,710
CITY OF SALISBURY	Commercial	111	$2,176,292
TOWN OF TROUTMAN	Utilities	1	$2,137,680
TOWN OF MOORESVILLE	Commercial	174	$1,965,642
IREDELL COUNTY	Utilities	2	$1,690,750
CITY OF STATESVILLE	Industrial	53	$1,202,628

Jurisdiction	Type	Number of Buildings	Damages
ROWAN COUNTY	Industrial	18	$988,780
CITY OF STATESVILLE	Commercial	95	$822,738
TOWN OF MOORESVILLE	Industrial	32	$736,702
CITY OF SALISBURY	Industrial	32	$554,259
IREDELL COUNTY	Industrial	24	$546,176
ROWAN COUNTY	Commercial	33	$477,714
IREDELL COUNTY	Residential	235	$423,131
TOWN OF EAST SPENCER	Commercial	1	$386,071
IREDELL COUNTY	Religious	24	$383,552
ROWAN COUNTY	Government	20	$369,319
CITY OF SALISBURY	Government	35	$303,695
CITY OF SALISBURY	Residential	77	$297,376
IREDELL COUNTY	Government	27	$292,212
TOWN OF MOORESVILLE	Government	17	$210,655
CITY OF STATESVILLE	Government	29	$196,363
IREDELL COUNTY	Commercial	34	$189,353
TOWN OF SPENCER	Commercial	11	$173,882
TOWN OF TROUTMAN	Industrial	5	$171,056
TOWN OF CLEVELAND	Industrial	6	$160,094
TOWN OF GRANITE QUARRY	Industrial	1	$151,477
CITY OF SALISBURY	Utilities	1	$140,800
CITY OF SALISBURY	Religious	14	$136,174
TOWN OF TROUTMAN	Commercial	9	$123,839
TOWN OF MOORESVILLE	Religious	20	$121,927
CITY OF STATESVILLE	Religious	19	$120,818
TOWN OF CLEVELAND	Residential	2	$99,052
TOWN OF LANDIS	Government	3	$98,425
ROWAN COUNTY	Residential	16	$86,265
TOWN OF SPENCER	Government	4	$81,428
TOWN OF MOORESVILLE	Residential	13	$78,054
TOWN OF CHINA GROVE	Government	2	$72,087
TOWN OF CHINA GROVE	Industrial	3	$57,269
TOWN OF CHINA GROVE	Commercial	5	$57,046
ROWAN COUNTY	Religious	11	$56,060
ROWAN COUNTY	Utilities	2	$55,640
TOWN OF CLEVELAND	Religious	1	$51,553
TOWN OF LANDIS	Commercial	1	$50,011
TOWN OF EAST SPENCER	Industrial	1	$46,314
TOWN OF EAST SPENCER	Government	2	$41,650
TOWN OF SPENCER	Industrial	2	$41,363
TOWN OF GRANITE QUARRY	Government	2	$33,868
TOWN OF TROUTMAN	Government	3	$30,350
CITY OF STATESVILLE	Residential	11	$28,964
TOWN OF ROCKWELL	Industrial	2	$28,184
TOWN OF LANDIS	Industrial	1	$24,556
TOWN OF ROCKWELL	Commercial	4	$23,955
TOWN OF TROUTMAN	Residential	3	$23,524
TOWN OF TROUTMAN	Religious	3	$23,021
TOWN OF CLEVELAND	Commercial	2	$15,232
TOWN OF ROCKWELL	Government	1	$13,740
TOWN OF ROCKWELL	Residential	3	$10,751
TOWN OF SPENCER	Residential	2	$9,604

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF SPENCER	Religious	3	$8,523
TOWN OF LANDIS	Residential	3	$8,384
TOWN OF FAITH	Residential	1	$6,661
TOWN OF FAITH	Religious	2	$6,029
TOWN OF GRANITE QUARRY	Commercial	1	$5,530
TOWN OF CHINA GROVE	Residential	3	$5,404
TOWN OF CLEVELAND	Government	1	$5,155
TOWN OF CHINA GROVE	Religious	1	$4,243
TOWN OF ROCKWELL	Religious	1	$4,191
TOWN OF LANDIS	Religious	1	$2,757
TOWN OF EAST SPENCER	Residential	1	$2,161
ROWAN COUNTY	Agricultural	1	$1,703

Table D- 39: High loss buildings at risk of 750-year earthquakes

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$7,077,529
CITY OF SALISBURY	Commercial	111	$4,835,595
CITY OF STATESVILLE	Utilities	5	$4,639,150
TOWN OF MOORESVILLE	Commercial	174	$4,334,536
TOWN OF TROUTMAN	Utilities	1	$4,018,320
IREDELL COUNTY	Utilities	2	$3,979,350
CITY OF STATESVILLE	Industrial	53	$2,309,924
ROWAN COUNTY	Industrial	18	$2,061,440
CITY OF STATESVILLE	Commercial	95	$1,794,655
TOWN OF MOORESVILLE	Industrial	32	$1,575,603
ROWAN COUNTY	Commercial	33	$1,086,350
CITY OF SALISBURY	Industrial	32	$1,063,609
IREDELL COUNTY	Residential	235	$1,020,634
IREDELL COUNTY	Industrial	24	$1,014,066
IREDELL COUNTY	Religious	24	$901,784
ROWAN COUNTY	Government	20	$772,482
CITY OF SALISBURY	Residential	77	$716,152
IREDELL COUNTY	Government	27	$658,634
CITY OF SALISBURY	Government	35	$657,141
TOWN OF EAST SPENCER	Commercial	1	$650,780
TOWN OF MOORESVILLE	Government	17	$467,461
CITY OF STATESVILLE	Government	29	$457,413
IREDELL COUNTY	Commercial	34	$389,936
TOWN OF SPENCER	Commercial	11	$375,431
CITY OF SALISBURY	Religious	14	$320,153
TOWN OF TROUTMAN	Industrial	5	$308,952
TOWN OF CLEVELAND	Industrial	6	$301,283
TOWN OF GRANITE QUARRY	Industrial	1	$295,540
TOWN OF TROUTMAN	Commercial	9	$285,520
CITY OF STATESVILLE	Religious	19	$280,602
TOWN OF MOORESVILLE	Religious	20	$268,575
TOWN OF CLEVELAND	Residential	2	$267,972
CITY OF SALISBURY	Utilities	1	$267,500
TOWN OF LANDIS	Government	3	$237,131
ROWAN COUNTY	Residential	16	$221,726
TOWN OF MOORESVILLE	Residential	13	$190,216
TOWN OF SPENCER	Government	4	$184,654
TOWN OF CHINA GROVE	Government	2	$172,305

Jurisdiction	Type	Number of Buildings	Damages
ROWAN COUNTY	Religious	11	$130,284
TOWN OF CHINA GROVE	Commercial	5	$127,520
TOWN OF CLEVELAND	Religious	1	$118,381
TOWN OF CHINA GROVE	Industrial	3	$109,218
TOWN OF LANDIS	Commercial	1	$105,559
ROWAN COUNTY	Utilities	2	$104,120
TOWN OF EAST SPENCER	Industrial	1	$89,490
TOWN OF EAST SPENCER	Government	2	$87,887
TOWN OF SPENCER	Industrial	2	$84,430
CITY OF STATESVILLE	Residential	11	$73,704
TOWN OF TROUTMAN	Government	3	$69,354
TOWN OF GRANITE QUARRY	Government	2	$66,009
TOWN OF ROCKWELL	Industrial	2	$61,779
TOWN OF ROCKWELL	Commercial	4	$56,495
TOWN OF TROUTMAN	Religious	3	$55,059
TOWN OF TROUTMAN	Residential	3	$50,032
TOWN OF LANDIS	Industrial	1	$49,845
TOWN OF ROCKWELL	Government	1	$34,818
TOWN OF CLEVELAND	Commercial	2	$34,215
TOWN OF ROCKWELL	Residential	3	$28,483
TOWN OF SPENCER	Residential	2	$26,624
TOWN OF LANDIS	Residential	3	$21,437
TOWN OF SPENCER	Religious	3	$18,267
TOWN OF FAITH	Religious	2	$16,490
TOWN OF FAITH	Residential	1	$16,006
TOWN OF CHINA GROVE	Residential	3	$15,208
TOWN OF GRANITE QUARRY	Commercial	1	$13,669
TOWN OF CLEVELAND	Government	1	$12,224
TOWN OF ROCKWELL	Religious	1	$11,578
TOWN OF CHINA GROVE	Religious	1	$10,861
TOWN OF LANDIS	Religious	1	$6,487
TOWN OF EAST SPENCER	Residential	1	$6,069
ROWAN COUNTY	Agricultural	1	$3,223

Table D- 40: High loss buildings at risk of 1000 year earthquakes

Jurisdiction	Type	Number of Buildings	Damages
OWN OF MOORESVILLE	Utilities	3	$9,944,216
CITY OF SALISBURY	Commercial	111	$7,407,869
CITY OF STATESVILLE	Utilities	5	$6,491,110
TOWN OF MOORESVILLE	Commercial	174	$6,254,868
TOWN OF TROUTMAN	Utilities	1	$5,592,960
IREDELL COUNTY	Utilities	2	$5,543,800
CITY OF STATESVILLE	Industrial	53	$3,012,010
ROWAN COUNTY	Industrial	18	$2,719,300
CITY OF STATESVILLE	Commercial	95	$2,461,878
TOWN OF MOORESVILLE	Industrial	32	$2,180,054
ROWAN COUNTY	Commercial	33	$1,655,495
IREDELL COUNTY	Residential	235	$1,502,087
CITY OF SALISBURY	Industrial	32	$1,466,556
IREDELL COUNTY	Industrial	24	$1,320,360
IREDELL COUNTY	Religious	24	$1,295,847
ROWAN COUNTY	Government	20	$1,116,269
CITY OF SALISBURY	Residential	77	$1,056,904

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF EAST SPENCER	Commercial	1	$1,000,734
CITY OF SALISBURY	Government	35	$995,690
IREDELL COUNTY	Government	27	$921,848
TOWN OF MOORESVILLE	Government	17	$659,594
CITY OF STATESVILLE	Government	29	$638,273
TOWN OF SPENCER	Commercial	11	$622,623
IREDELL COUNTY	Commercial	34	$545,991
TOWN OF GRANITE QUARRY	Industrial	1	$446,930
CITY OF SALISBURY	Religious	14	$446,376
TOWN OF TROUTMAN	Industrial	5	$398,997
TOWN OF TROUTMAN	Commercial	9	$392,410
TOWN OF CLEVELAND	Residential	2	$389,590
CITY OF STATESVILLE	Religious	19	$385,566
TOWN OF CLEVELAND	Industrial	6	$381,351
CITY OF SALISBURY	Utilities	1	$375,600
TOWN OF MOORESVILLE	Religious	20	$374,486
TOWN OF LANDIS	Government	3	$344,250
ROWAN COUNTY	Residential	16	$325,059
TOWN OF MOORESVILLE	Residential	13	$284,716
TOWN OF SPENCER	Government	4	$264,680
TOWN OF CHINA GROVE	Government	2	$251,467
TOWN OF CHINA GROVE	Commercial	5	$208,360
ROWAN COUNTY	Religious	11	$188,716
TOWN OF EAST SPENCER	Government	2	$158,231
TOWN OF CLEVELAND	Religious	1	$156,254
TOWN OF CHINA GROVE	Industrial	3	$148,386
TOWN OF LANDIS	Commercial	1	$147,746
ROWAN COUNTY	Utilities	2	$144,880
TOWN OF EAST SPENCER	Industrial	1	$136,329
TOWN OF SPENCER	Industrial	2	$114,505
CITY OF STATESVILLE	Residential	11	$104,773
TOWN OF TROUTMAN	Government	3	$95,880
TOWN OF ROCKWELL	Commercial	4	$90,654
TOWN OF GRANITE QUARRY	Government	2	$88,408
TOWN OF ROCKWELL	Industrial	2	$86,771
TOWN OF TROUTMAN	Religious	3	$75,967
TOWN OF LANDIS	Industrial	1	$67,602
TOWN OF TROUTMAN	Residential	3	$64,349
TOWN OF ROCKWELL	Government	1	$60,090
TOWN OF CLEVELAND	Commercial	2	$47,634
TOWN OF ROCKWELL	Residential	3	$42,170
TOWN OF SPENCER	Residential	2	$40,036
TOWN OF LANDIS	Residential	3	$32,278
TOWN OF SPENCER	Religious	3	$26,675
TOWN OF CHINA GROVE	Residential	3	$25,467
TOWN OF FAITH	Religious	2	$23,946
TOWN OF FAITH	Residential	1	$21,903
TOWN OF GRANITE QUARRY	Commercial	1	$19,712
TOWN OF ROCKWELL	Religious	1	$17,553
TOWN OF CLEVELAND	Government	1	$16,050
TOWN OF CHINA GROVE	Religious	1	$15,954
TOWN OF LANDIS	Religious	1	$9,569

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF EAST SPENCER	Residential	1	$9,012
ROWAN COUNTY	Agricultural	1	$4,121

Table D- 41: High loss buildings at risk of 1500 year earthquakes

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$14,234,336
TOWN OF MOORESVILLE	Utilities	3	$14,108,151
TOWN OF MOORESVILLE	Commercial	174	$11,268,371
IREDELL COUNTY	Utilities	2	$10,071,850
CITY OF STATESVILLE	Utilities	5	$9,127,940
TOWN OF TROUTMAN	Utilities	1	$7,752,960
CITY OF STATESVILLE	Industrial	53	$5,184,150
ROWAN COUNTY	Industrial	18	$4,574,778
CITY OF STATESVILLE	Commercial	95	$4,507,111
TOWN OF MOORESVILLE	Industrial	32	$3,622,977
ROWAN COUNTY	Commercial	33	$2,906,117
IREDELL COUNTY	Residential	235	$2,858,791
CITY OF SALISBURY	Industrial	32	$2,595,147
IREDELL COUNTY	Religious	24	$2,412,537
CITY OF SALISBURY	Residential	77	$2,133,924
IREDELL COUNTY	Industrial	24	$2,106,873
ROWAN COUNTY	Government	20	$1,952,141
CITY OF SALISBURY	Government	35	$1,835,825
IREDELL COUNTY	Government	27	$1,669,577
TOWN OF EAST SPENCER	Commercial	1	$1,429,427
TOWN OF MOORESVILLE	Government	17	$1,223,365
CITY OF STATESVILLE	Government	29	$1,216,062
TOWN OF SPENCER	Commercial	11	$1,139,691
IREDELL COUNTY	Commercial	34	$954,234
CITY OF SALISBURY	Religious	14	$857,647
TOWN OF CLEVELAND	Residential	2	$816,501
CITY OF STATESVILLE	Religious	19	$717,338
TOWN OF TROUTMAN	Commercial	9	$717,305
TOWN OF TROUTMAN	Industrial	5	$707,543
TOWN OF MOORESVILLE	Religious	20	$668,089
ROWAN COUNTY	Residential	16	$656,632
TOWN OF GRANITE QUARRY	Industrial	1	$648,783
TOWN OF LANDIS	Government	3	$644,662
TOWN OF CLEVELAND	Industrial	6	$576,522
TOWN OF MOORESVILLE	Residential	13	$556,360
TOWN OF SPENCER	Government	4	$536,781
CITY OF SALISBURY	Utilities	1	$533,550
TOWN OF CHINA GROVE	Government	2	$520,797
TOWN OF CHINA GROVE	Commercial	5	$382,375
ROWAN COUNTY	Religious	11	$342,404
TOWN OF LANDIS	Commercial	1	$289,930
TOWN OF CLEVELAND	Religious	1	$250,982
TOWN OF EAST SPENCER	Government	2	$248,726
TOWN OF CHINA GROVE	Industrial	3	$229,442
CITY OF STATESVILLE	Residential	11	$220,965
ROWAN COUNTY	Utilities	2	$207,660
TOWN OF EAST SPENCER	Industrial	1	$194,453
TOWN OF SPENCER	Industrial	2	$193,839

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF TROUTMAN	Government	3	$189,826
TOWN OF GRANITE QUARRY	Government	2	$177,983
TOWN OF ROCKWELL	Commercial	4	$167,378
TOWN OF ROCKWELL	Industrial	2	$160,540
TOWN OF TROUTMAN	Religious	3	$141,094
TOWN OF LANDIS	Industrial	1	$116,410
TOWN OF TROUTMAN	Residential	3	$111,024
TOWN OF ROCKWELL	Government	1	$99,121
TOWN OF CLEVELAND	Commercial	2	$88,529
TOWN OF SPENCER	Residential	2	$84,333
TOWN OF ROCKWELL	Residential	3	$82,995
TOWN OF CHINA GROVE	Residential	3	$66,074
TOWN OF LANDIS	Residential	3	$62,089
TOWN OF FAITH	Religious	2	$50,939
TOWN OF SPENCER	Religious	3	$47,400
TOWN OF FAITH	Residential	1	$40,218
TOWN OF GRANITE QUARRY	Commercial	1	$37,862
TOWN OF ROCKWELL	Religious	1	$36,108
TOWN OF CHINA GROVE	Religious	1	$29,506
TOWN OF CLEVELAND	Government	1	$26,742
TOWN OF LANDIS	Religious	1	$19,419
TOWN OF EAST SPENCER	Residential	1	$19,266
ROWAN COUNTY	Agricultural	1	$6,878

Table D- 42: High loss buildings at risk of 2000 year

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$21,210,138
TOWN OF MOORESVILLE	Utilities	3	$19,846,013
TOWN OF MOORESVILLE	Commercial	174	$14,839,864
CITY OF STATESVILLE	Utilities	5	$13,211,260
IREDELL COUNTY	Utilities	2	$12,158,450
TOWN OF TROUTMAN	Utilities	1	$11,154,960
CITY OF STATESVILLE	Industrial	53	$6,776,186
CITY OF STATESVILLE	Commercial	95	$5,997,638
ROWAN COUNTY	Industrial	18	$5,826,836
TOWN OF MOORESVILLE	Industrial	32	$4,492,352
ROWAN COUNTY	Commercial	33	$4,250,096
IREDELL COUNTY	Residential	235	$3,748,329
CITY OF SALISBURY	Industrial	32	$3,479,679
IREDELL COUNTY	Religious	24	$3,128,800
CITY OF SALISBURY	Residential	77	$2,952,529
ROWAN COUNTY	Government	20	$2,813,069
IREDELL COUNTY	Industrial	24	$2,751,791
CITY OF SALISBURY	Government	35	$2,742,321
TOWN OF EAST SPENCER	Commercial	1	$2,153,563
IREDELL COUNTY	Government	27	$2,150,304
TOWN OF SPENCER	Commercial	11	$1,734,440
TOWN OF MOORESVILLE	Government	17	$1,613,702
CITY OF STATESVILLE	Government	29	$1,597,488
IREDELL COUNTY	Commercial	34	$1,279,979
CITY OF SALISBURY	Religious	14	$1,135,311
TOWN OF CLEVELAND	Residential	2	$1,106,171
TOWN OF GRANITE QUARRY	Industrial	1	$955,508

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF TROUTMAN	Industrial	5	$924,136
CITY OF STATESVILLE	Religious	19	$923,365
TOWN OF TROUTMAN	Commercial	9	$897,987
ROWAN COUNTY	Residential	16	$858,676
TOWN OF MOORESVILLE	Religious	20	$857,276
TOWN OF LANDIS	Government	3	$812,510
CITY OF SALISBURY	Utilities	1	$774,000
TOWN OF SPENCER	Government	4	$767,807
TOWN OF MOORESVILLE	Residential	13	$751,609
TOWN OF CLEVELAND	Industrial	6	$723,430
TOWN OF CHINA GROVE	Government	2	$715,774
TOWN OF CHINA GROVE	Commercial	5	$570,148
ROWAN COUNTY	Religious	11	$461,567
TOWN OF EAST SPENCER	Government	2	$405,350
TOWN OF LANDIS	Commercial	1	$394,579
TOWN OF CLEVELAND	Religious	1	$310,970
TOWN OF CHINA GROVE	Industrial	3	$301,966
ROWAN COUNTY	Utilities	2	$297,360
CITY OF STATESVILLE	Residential	11	$296,770
TOWN OF EAST SPENCER	Industrial	1	$289,869
TOWN OF SPENCER	Industrial	2	$257,318
TOWN OF TROUTMAN	Government	3	$256,829
TOWN OF ROCKWELL	Commercial	4	$255,221
TOWN OF GRANITE QUARRY	Government	2	$254,580
TOWN OF ROCKWELL	Industrial	2	$207,865
TOWN OF TROUTMAN	Religious	3	$177,806
TOWN OF ROCKWELL	Government	1	$157,693
TOWN OF LANDIS	Industrial	1	$148,123
TOWN OF TROUTMAN	Residential	3	$144,574
TOWN OF SPENCER	Residential	2	$115,946
TOWN OF CLEVELAND	Commercial	2	$114,085
TOWN OF ROCKWELL	Residential	3	$109,310
TOWN OF CHINA GROVE	Residential	3	$95,343
TOWN OF LANDIS	Residential	3	$79,334
TOWN OF FAITH	Religious	2	$67,376
TOWN OF SPENCER	Religious	3	$64,952
TOWN OF FAITH	Residential	1	$53,466
TOWN OF GRANITE QUARRY	Commercial	1	$48,486
TOWN OF ROCKWELL	Religious	1	$47,223
TOWN OF CHINA GROVE	Religious	1	$36,801
TOWN OF CLEVELAND	Government	1	$34,196
TOWN OF LANDIS	Religious	1	$26,970
TOWN OF EAST SPENCER	Residential	1	$26,010
ROWAN COUNTY	Agricultural	1	$8,963

Table D- 43: High loss buildings at risk of a 2500 year earthquake

Jurisdictions	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$27,744,559
TOWN OF MOORESVILLE	Utilities	3	$23,638,646
TOWN OF MOORESVILLE	Commercial	174	$20,304,753
CITY OF STATESVILLE	Utilities	5	$16,103,080
IREDELL COUNTY	Utilities	2	$14,781,100
TOWN OF TROUTMAN	Utilities	1	$13,456,080

Jurisdictions	Type	Number of Buildings	Damages
CITY OF STATESVILLE	Industrial	53	$8,664,434
CITY OF STATESVILLE	Commercial	95	$7,765,257
ROWAN COUNTY	Industrial	18	$7,470,249
ROWAN COUNTY	Commercial	33	$5,760,933
TOWN OF MOORESVILLE	Industrial	32	$5,663,387
IREDELL COUNTY	Residential	235	$5,032,225
CITY OF SALISBURY	Industrial	32	$4,440,515
CITY OF SALISBURY	Residential	77	$3,903,860
ROWAN COUNTY	Government	20	$3,806,260
CITY OF SALISBURY	Government	35	$3,778,195
IREDELL COUNTY	Religious	24	$3,762,242
IREDELL COUNTY	Industrial	24	$3,480,636
IREDELL COUNTY	Government	27	$2,863,661
TOWN OF EAST SPENCER	Commercial	1	$2,708,554
TOWN OF MOORESVILLE	Government	17	$2,392,335
TOWN OF SPENCER	Commercial	11	$2,286,750
CITY OF STATESVILLE	Government	29	$2,063,319
IREDELL COUNTY	Commercial	34	$1,757,743
CITY OF SALISBURY	Religious	14	$1,525,171
TOWN OF CLEVELAND	Residential	2	$1,409,511
TOWN OF TROUTMAN	Industrial	5	$1,278,368
TOWN OF MOORESVILLE	Religious	20	$1,243,233
TOWN OF GRANITE QUARRY	Industrial	1	$1,174,746
CITY OF STATESVILLE	Religious	19	$1,167,552
TOWN OF MOORESVILLE	Residential	13	$1,145,382
TOWN OF TROUTMAN	Commercial	9	$1,143,710
TOWN OF LANDIS	Government	3	$1,136,108
TOWN OF SPENCER	Government	4	$1,115,155
ROWAN COUNTY	Residential	16	$1,114,051
TOWN OF CHINA GROVE	Government	2	$995,622
CITY OF SALISBURY	Utilities	1	$936,800
TOWN OF CLEVELAND	Industrial	6	$883,478
TOWN OF CHINA GROVE	Commercial	5	$791,439
TOWN OF LANDIS	Commercial	1	$639,229
ROWAN COUNTY	Religious	11	$617,669
TOWN OF EAST SPENCER	Government	2	$516,916
TOWN OF CHINA GROVE	Industrial	3	$402,576
TOWN OF GRANITE QUARRY	Government	2	$388,533
TOWN OF CLEVELAND	Religious	1	$388,000
CITY OF STATESVILLE	Residential	11	$381,978
TOWN OF TROUTMAN	Government	3	$365,333
ROWAN COUNTY	Utilities	2	$363,840
TOWN OF ROCKWELL	Commercial	4	$362,240
TOWN OF EAST SPENCER	Industrial	1	$357,690
TOWN OF SPENCER	Industrial	2	$330,663
TOWN OF ROCKWELL	Industrial	2	$314,159
TOWN OF TROUTMAN	Religious	3	$229,820
TOWN OF LANDIS	Industrial	1	$214,417
TOWN OF ROCKWELL	Government	1	$201,383
TOWN OF TROUTMAN	Residential	3	$193,653
TOWN OF ROCKWELL	Residential	3	$157,392
TOWN OF SPENCER	Residential	2	$148,242

Jurisdictions	Type	Number of Buildings	Damages
TOWN OF CLEVELAND	Commercial	2	$143,735
TOWN OF CHINA GROVE	Residential	3	$123,571
TOWN OF LANDIS	Residential	3	$109,053
TOWN OF FAITH	Religious	2	$89,790
TOWN OF SPENCER	Religious	3	$84,278
TOWN OF FAITH	Residential	1	$78,883
TOWN OF GRANITE QUARRY	Commercial	1	$64,881
TOWN OF ROCKWELL	Religious	1	$64,192
TOWN OF CHINA GROVE	Religious	1	$50,126
TOWN OF CLEVELAND	Government	1	$44,457
TOWN OF LANDIS	Religious	1	$36,500
TOWN OF EAST SPENCER	Residential	1	$34,093
ROWAN COUNTY	Agricultural	1	$11,316

Table D- 44: Buildings at risk of 25 year hurricane winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,593	52,985	$4,724,352	1,174	$131,655	683	$286,477	54,842	$5,142,484
ROWAN COUNTY	12,049	36,159	$3,516,927	2,169	$953,392	541	$277,923	38,869	$4,748,243
CITY OF SALISBURY	9,573	12,015	$1,444,231	1,446	$515,558	438	$134,393	13,899	$2,094,182
TOWN OF MOORESVILLE	5,481	12,659	$980,332	1,466	$437,644	241	$162,493	14,366	$1,580,468
CITY OF STATESVILLE	10,668	11,777	$939,478	1,837	$405,964	422	$47,745	14,036	$1,393,187
TOWN OF GRANITE QUARRY	1,467	2,175	$205,979	142	$44,489	33	$72,435	2,350	$322,903
TOWN OF CHINA GROVE	2,521	2,284	$269,671	203	$34,506	56	$12,109	2,543	$316,286
TOWN OF ROCKWELL	1,704	2,208	$197,962	156	$108,133	38	$4,469	2,402	$310,563
TOWN OF SPENCER	1,962	1,812	$234,310	132	$61,488	46	$14,559	1,990	$310,357
TOWN OF EAST SPENCER	1,005	941	$86,601	33	$167,791	37	$25,254	1,011	$279,646
TOWN OF FAITH	1,150	1,500	$170,522	76	$24,103	13	$1,706	1,589	$196,332
TOWN OF LANDIS	1,385	1,391	$126,843	112	$26,536	39	$14,560	1,542	$167,939
TOWN OF TROUTMAN	2,379	2,126	$133,398	229	$19,495	58	$5,161	2,413	$158,054
TOWN OF CLEVELAND	812	729	$76,592	58	$14,413	25	$21,458	812	$112,463
TOWN OF HARMONY	432	370	$23,914	41	$1,760	27	$1,399	438	$27,072
TOWN OF LOVE VALLEY	243	221	$9,790	21	$553	1	$23	243	$10,366

Table D- 45: Buildings at risk of 50 year hurricane wind damages

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,606	53,074	$4,815,339	1,174	$170,733	683	$308,334	54,931	$5,294,406
ROWAN COUNTY	12,049	36,159	$3,516,927	2,169	$953,392	541	$277,923	38,869	$4,748,243
CITY OF SALISBURY	9,573	12,015	$1,444,231	1,446	$515,558	438	$134,393	13,899	$2,094,182

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF MOORESVILLE	5,482	12,661	$1,008,234	1,466	$523,704	241	$175,593	14,368	$1,707,532
CITY OF STATESVILLE	10,682	11,796	$969,994	1,837	$490,486	422	$66,312	14,055	$1,526,792
TOWN OF GRANITE QUARRY	1,467	2,175	$205,979	142	$44,489	33	$72,435	2,350	$322,903
TOWN OF CHINA GROVE	2,521	2,284	$269,671	203	$34,506	56	$12,109	2,543	$316,286
TOWN OF ROCKWELL	1,704	2,208	$197,962	156	$108,133	38	$4,469	2,402	$310,563
TOWN OF SPENCER	1,962	1,812	$234,310	132	$61,488	46	$14,559	1,990	$310,357
TOWN OF EAST SPENCER	1,005	941	$86,601	33	$167,791	37	$25,254	1,011	$279,646
TOWN OF FAITH	1,150	1,500	$170,522	76	$24,103	13	$1,706	1,589	$196,332
TOWN OF TROUTMAN	2,382	2,129	$136,319	229	$28,197	58	$7,161	2,416	$171,678
TOWN OF LANDIS	1,385	1,391	$126,843	112	$26,536	39	$14,560	1,542	$167,939
TOWN OF CLEVELAND	812	729	$76,592	58	$14,413	25	$21,458	812	$112,463
TOWN OF HARMONY	432	370	$24,396	41	$2,347	27	$2,098	438	$28,840
TOWN OF LOVE VALLEY	243	221	$10,099	21	$649	1	$35	243	$10,783

Table D- 46: Buildings at risk of 100 year hurricane winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
IREDELL COUNTY	25,608	53,089	$17,305,082	1,174	$514,352	683	$1,316,098	54,946	$19,135,532
ROWAN COUNTY	12,053	36,166	$11,742,528	2,169	$4,731,695	541	$1,422,227	38,876	$17,896,450
CITY OF SALISBURY	9,631	12,073	$4,726,070	1,446	$2,285,022	438	$585,742	13,957	$7,596,834
TOWN OF MOORESVILLE	5,482	12,661	$3,935,982	1,466	$1,506,849	241	$644,309	14,368	$6,087,140
CITY OF STATESVILLE	10,684	11,798	$3,384,255	1,837	$1,182,770	422	$141,521	14,057	$4,708,546
TOWN OF ROCKWELL	1,704	2,208	$749,378	156	$531,330	38	$14,475	2,402	$1,295,184
TOWN OF EAST SPENCER	1,009	945	$293,178	33	$867,958	37	$122,433	1,015	$1,283,569
TOWN OF GRANITE QUARRY	1,467	2,175	$707,615	142	$204,626	33	$370,983	2,350	$1,283,224

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF CHINA GROVE	2,524	2,287	$880,662	203	$148,571	56	$45,934	2,546	$1,075,167
TOWN OF SPENCER	1,982	1,832	$700,638	132	$294,669	46	$62,096	2,010	$1,057,403
TOWN OF LANDIS	1,387	1,393	$495,617	112	$132,717	39	$62,441	1,544	$690,774
TOWN OF FAITH	1,150	1,500	$559,365	76	$121,944	13	$7,720	1,589	$689,028
TOWN OF TROUTMAN	2,382	2,129	$509,457	229	$46,926	58	$14,458	2,416	$570,841
TOWN OF CLEVELAND	812	729	$303,619	58	$71,508	25	$109,003	812	$484,130
TOWN OF HARMONY	432	370	$82,485	41	$3,737	27	$3,119	438	$89,341
TOWN OF LOVE VALLEY	243	221	$34,380	21	$1,760	1	$39	243	$36,179

Table D- 47: Buildings at risk of 300 year hurricane winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$73,553,696	2,169	$42,706,015	541	$12,803,182	38,876	$129,062,892
IREDELL COUNTY	25,875	53,612	$105,630,857	1,174	$6,671,534	683	$8,199,058	55,469	$120,501,449
CITY OF SALISBURY	9,631	12,073	$33,342,360	1,446	$24,927,530	438	$6,348,950	13,957	$64,618,841
TOWN OF MOORESVILLE	5,526	12,730	$25,877,456	1,466	$14,815,022	241	$4,428,504	14,437	$45,120,982
CITY OF STATESVILLE	10,854	11,990	$19,380,338	1,837	$12,204,861	422	$2,111,845	14,249	$33,697,043
TOWN OF EAST SPENCER	1,009	945	$2,267,284	33	$7,434,274	37	$1,192,126	1,015	$10,893,685
TOWN OF ROCKWELL	1,704	2,208	$5,474,338	156	$3,862,296	38	$258,140	2,402	$9,594,774
TOWN OF SPENCER	1,982	1,832	$4,975,382	132	$2,907,508	46	$803,426	2,010	$8,686,316
TOWN OF CHINA GROVE	2,524	2,287	$6,495,900	203	$1,387,636	56	$679,376	2,546	$8,562,912
TOWN OF GRANITE QUARRY	1,467	2,175	$4,680,536	142	$1,734,146	33	$2,076,879	2,350	$8,491,560
TOWN OF LANDIS	1,387	1,393	$3,422,633	112	$1,742,962	39	$785,300	1,544	$5,950,895
TOWN OF CLEVELAND	812	729	$2,779,131	58	$1,050,316	25	$1,065,587	812	$4,895,034
TOWN OF FAITH	1,150	1,500	$3,539,110	76	$969,229	13	$106,332	1,589	$4,614,672
TOWN OF TROUTMAN	2,404	2,151	$2,778,077	229	$706,179	58	$211,126	2,438	$3,695,382
TOWN OF HARMONY	438	376	$427,748	41	$34,127	27	$82,217	444	$544,093

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF LOVE VALLEY	258	236	$206,746	21	$16,643	1	$284	258	$223,674

Table D- 48: Buildings at risk of 700 year hurricane winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$224,349,315	2,169	$91,566,326	541	$29,502,153	38,876	$345,417,794
IREDELL COUNTY	25,875	53,612	$304,745,579	1,174	$20,968,850	683	$16,346,589	55,469	$342,061,017
CITY OF SALISBURY	9,631	12,073	$104,467,581	1,446	$62,715,565	438	$16,338,701	13,957	$183,521,846
TOWN OF MOORESVILLE	5,526	12,730	$76,643,095	1,466	$41,653,264	241	$9,253,243	14,437	$127,549,602
CITY OF STATESVILLE	10,854	11,990	$53,357,007	1,837	$38,445,676	422	$7,597,515	14,249	$99,400,198
TOWN OF CHINA GROVE	2,524	2,287	$21,671,653	203	$3,627,754	56	$2,473,353	2,546	$27,772,760
TOWN OF ROCKWELL	1,704	2,208	$17,223,802	156	$7,457,298	38	$977,286	2,402	$25,658,386
TOWN OF SPENCER	1,982	1,832	$15,782,482	132	$6,101,721	46	$2,110,309	2,010	$23,994,511
TOWN OF EAST SPENCER	1,009	945	$6,896,792	33	$12,486,876	37	$2,385,608	1,015	$21,769,276
TOWN OF GRANITE QUARRY	1,467	2,175	$13,271,076	142	$3,418,116	33	$3,425,207	2,350	$20,114,399
TOWN OF LANDIS	1,387	1,393	$10,965,278	112	$5,101,961	39	$2,387,064	1,544	$18,454,303
TOWN OF CLEVELAND	812	729	$7,876,869	58	$3,246,674	25	$2,174,656	812	$13,298,199
TOWN OF FAITH	1,150	1,500	$11,094,775	76	$1,817,294	13	$302,296	1,589	$13,214,366
TOWN OF TROUTMAN	2,404	2,151	$7,216,898	229	$2,572,033	58	$709,306	2,438	$10,498,237
TOWN OF HARMONY	438	376	$1,200,044	41	$113,182	27	$355,223	444	$1,668,449
TOWN OF LOVE VALLEY	258	236	$609,699	21	$39,917	1	$918	258	$650,534

Table D- 49: Population at risk of 25, 50, 100, 300, and 700-year hurricane winds

Jurisdiction	25-year hurricane winds			50-year hurricane winds			100-year hurricane winds			300-year hurricane winds			700-year hurricane winds		
	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk
CITY OF SALISBURY	6,194	2,165	34,902	6,194	2,165	34,902	6,224	2,175	35,069	6,224	2,175	35,069	6,224	2,175	35,069
CITY OF STATESVILLE	5,004	1,527	30,562	5,012	1,529	30,611	5,013	1,529	30,616	5,094	1,554	31,109	5,094	1,554	31,109
IREDELL COUNTY	20,743	6,744	128,146	20,778	6,756	128,361	20,783	6,757	128,397	20,988	6,824	129,661	20,988	6,824	129,661
ROWAN COUNTY	14,831	4,109	81,257	14,831	4,109	81,257	14,834	4,110	81,273	14,834	4,110	81,273	14,834	4,110	81,273
TOWN OF CHINA GROVE	681	304	4,193	681	304	4,193	682	304	4,198	682	304	4,198	682	304	4,198
TOWN OF CLEVELAND	101	33	665	101	33	665	101	33	665	101	33	665	101	33	665
TOWN OF EAST SPENCER	390	66	1,615	390	66	1,615	392	66	1,622	392	66	1,622	392	66	1,622
TOWN OF FAITH	367	132	2,502	367	132	2,502	367	132	2,502	367	132	2,502	367	132	2,502
TOWN OF GRANITE QUARRY	546	213	4,543	546	213	4,543	546	213	4,543	546	213	4,543	546	213	4,543
TOWN OF HARMONY	17	4	95	17	4	95	17	4	95	17	4	97	17	4	97
TOWN OF LANDIS	451	215	2,649	451	215	2,649	452	215	2,653	452	215	2,653	452	215	2,653
TOWN OF LOVE VALLEY	7	3	52	7	3	52	7	3	52	8	3	56	8	3	56
TOWN OF MOORESVILLE	5,522	2,342	40,315	5,523	2,342	40,321	5,523	2,342	40,321	5,553	2,355	40,540	5,553	2,355	40,540
TOWN OF ROCKWELL	453	132	2,788	453	132	2,788	453	132	2,788	453	132	2,788	453	132	2,788
TOWN OF SPENCER	909	191	4,158	909	191	4,158	919	193	4,204	919	193	4,204	919	193	4,204
TOWN OF TROUTMAN	752	294	4,521	753	294	4,527	753	294	4,527	761	297	4,574	761	297	4,574

Table D- 50: High loss buildings at risk of 700-year hurricane winds

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Residential	235	$32,104,036
CITY OF SALISBURY	Commercial	111	$30,355,384
IREDELL COUNTY	Utilities	2	$26,663,221
TOWN OF MOORESVILLE	Commercial	174	$24,279,982
TOWN OF MOORESVILLE	Utilities	3	$15,325,660
CITY OF STATESVILLE	Utilities	5	$15,060,898
ROWAN COUNTY	Industrial	18	$14,928,080
TOWN OF EAST SPENCER	Commercial	1	$10,937,832
IREDELL COUNTY	Religious	24	$9,686,849
CITY OF STATESVILLE	Commercial	95	$9,567,856
ROWAN COUNTY	Government	20	$8,531,527
ROWAN COUNTY	Commercial	33	$8,081,655
CITY OF STATESVILLE	Industrial	53	$6,762,981
TOWN OF MOORESVILLE	Government	17	$6,083,477
TOWN OF TROUTMAN	Utilities	1	$5,876,493
IREDELL COUNTY	Industrial	24	$5,065,099
IREDELL COUNTY	Commercial	34	$4,337,168
CITY OF SALISBURY	Residential	77	$4,331,474
CITY OF SALISBURY	Government	35	$3,933,578
TOWN OF MOORESVILLE	Industrial	32	$3,555,426
CITY OF SALISBURY	Industrial	32	$3,386,289
TOWN OF SPENCER	Commercial	11	$3,304,128
TOWN OF CLEVELAND	Residential	2	$3,066,778
ROWAN COUNTY	Residential	16	$2,323,497
CITY OF STATESVILLE	Government	29	$2,102,672
IREDELL COUNTY	Government	27	$1,942,129
CITY OF SALISBURY	Religious	14	$1,873,839
TOWN OF CLEVELAND	Industrial	6	$1,710,051
TOWN OF LANDIS	Government	3	$1,550,808
TOWN OF EAST SPENCER	Government	2	$1,477,517
TOWN OF CLEVELAND	Religious	1	$1,474,498
CITY OF STATESVILLE	Religious	19	$1,390,793
TOWN OF SPENCER	Government	4	$1,298,031
TOWN OF MOORESVILLE	Residential	13	$1,263,520
ROWAN COUNTY	Religious	11	$1,223,092
TOWN OF CHINA GROVE	Government	2	$1,186,681
TOWN OF LANDIS	Commercial	1	$1,177,602
CITY OF STATESVILLE	Residential	11	$1,124,592
TOWN OF TROUTMAN	Commercial	9	$982,502
CITY OF SALISBURY	Utilities	1	$861,537
TOWN OF TROUTMAN	Residential	3	$764,481
TOWN OF MOORESVILLE	Religious	20	$744,416
TOWN OF CHINA GROVE	Commercial	5	$671,159
TOWN OF GRANITE QUARRY	Government	2	$478,267
TOWN OF SPENCER	Industrial	2	$462,964
TOWN OF CLEVELAND	Commercial	2	$384,829
TOWN OF TROUTMAN	Industrial	5	$330,882
TOWN OF ROCKWELL	Government	1	$316,292
ROWAN COUNTY	Utilities	2	$281,535
TOWN OF EAST SPENCER	Industrial	1	$277,318
TOWN OF CHINA GROVE	Industrial	3	$259,495
TOWN OF FAITH	Residential	1	$249,737

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF SPENCER	Residential	2	$241,082
TOWN OF LANDIS	Industrial	1	$213,800
TOWN OF ROCKWELL	Commercial	4	$199,504
TOWN OF ROCKWELL	Residential	3	$180,808
TOWN OF TROUTMAN	Government	3	$165,254
TOWN OF LANDIS	Residential	3	$158,684
TOWN OF TROUTMAN	Religious	3	$147,276
TOWN OF CHINA GROVE	Residential	3	$146,882
TOWN OF GRANITE QUARRY	Industrial	1	$145,787
TOWN OF ROCKWELL	Religious	1	$129,956
TOWN OF FAITH	Religious	2	$127,830
TOWN OF CLEVELAND	Government	1	$68,366
TOWN OF ROCKWELL	Industrial	2	$56,469
TOWN OF GRANITE QUARRY	Commercial	1	$46,014
TOWN OF SPENCER	Religious	3	$37,366
TOWN OF LANDIS	Religious	1	$27,448
TOWN OF CHINA GROVE	Religious	1	$26,892
TOWN OF EAST SPENCER	Residential	1	$25,558
ROWAN COUNTY	Agricultural	1	$9,548

Table D- 51: High loss buildings at risk of 300-year hurricane winds

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$12,731,462
IREDELL COUNTY	Residential	235	$9,591,927
TOWN OF MOORESVILLE	Commercial	174	$9,438,196
ROWAN COUNTY	Industrial	18	$8,454,457
TOWN OF EAST SPENCER	Commercial	1	$6,758,783
IREDELL COUNTY	Utilities	2	$6,651,692
IREDELL COUNTY	Religious	24	$6,104,017
CITY OF STATESVILLE	Commercial	95	$3,554,779
TOWN OF MOORESVILLE	Utilities	3	$3,352,461
ROWAN COUNTY	Government	20	$3,294,805
CITY OF STATESVILLE	Utilities	5	$3,288,101
TOWN OF MOORESVILLE	Government	17	$3,257,993
ROWAN COUNTY	Commercial	33	$3,039,088
CITY OF STATESVILLE	Industrial	53	$1,936,947
TOWN OF SPENCER	Commercial	11	$1,719,555
IREDELL COUNTY	Commercial	34	$1,705,496
CITY OF SALISBURY	Government	35	$1,665,373
CITY OF SALISBURY	Residential	77	$1,545,496
IREDELL COUNTY	Industrial	24	$1,507,975
TOWN OF TROUTMAN	Utilities	1	$1,359,536
TOWN OF CLEVELAND	Residential	2	$1,189,084
CITY OF SALISBURY	Industrial	32	$1,101,171
TOWN OF EAST SPENCER	Government	2	$890,719
TOWN OF MOORESVILLE	Industrial	32	$869,094
TOWN OF CLEVELAND	Religious	1	$831,719
ROWAN COUNTY	Residential	16	$771,491
CITY OF SALISBURY	Religious	14	$656,193
IREDELL COUNTY	Government	27	$577,814
CITY OF STATESVILLE	Government	29	$573,011
ROWAN COUNTY	Religious	11	$512,692
TOWN OF CLEVELAND	Industrial	6	$508,233

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF LANDIS	Government	3	$491,685
TOWN OF SPENCER	Government	4	$465,498
TOWN OF MOORESVILLE	Residential	13	$403,385
CITY OF STATESVILLE	Residential	11	$384,179
TOWN OF LANDIS	Commercial	1	$376,385
CITY OF STATESVILLE	Religious	19	$360,846
TOWN OF CHINA GROVE	Government	2	$272,971
TOWN OF TROUTMAN	Residential	3	$256,549
TOWN OF MOORESVILLE	Religious	20	$256,105
TOWN OF TROUTMAN	Commercial	9	$229,861
TOWN OF CHINA GROVE	Commercial	5	$195,646
CITY OF SALISBURY	Utilities	1	$172,579
TOWN OF GRANITE QUARRY	Government	2	$169,265
TOWN OF SPENCER	Industrial	2	$150,044
TOWN OF CLEVELAND	Commercial	2	$120,650
TOWN OF TROUTMAN	Industrial	5	$100,313
TOWN OF FAITH	Residential	1	$98,393
TOWN OF SPENCER	Residential	2	$96,907
TOWN OF EAST SPENCER	Industrial	1	$89,030
TOWN OF LANDIS	Industrial	1	$88,826
TOWN OF CHINA GROVE	Industrial	3	$73,811
TOWN OF ROCKWELL	Residential	3	$63,967
TOWN OF LANDIS	Residential	3	$63,374
ROWAN COUNTY	Utilities	2	$60,863
TOWN OF ROCKWELL	Government	1	$60,792
TOWN OF GRANITE QUARRY	Industrial	1	$49,367
TOWN OF FAITH	Religious	2	$47,474
TOWN OF TROUTMAN	Government	3	$47,159
TOWN OF CHINA GROVE	Residential	3	$47,056
TOWN OF ROCKWELL	Commercial	4	$45,092
TOWN OF ROCKWELL	Religious	1	$45,041
TOWN OF TROUTMAN	Religious	3	$34,760
TOWN OF ROCKWELL	Industrial	2	$17,534
TOWN OF GRANITE QUARRY	Commercial	1	$14,790
TOWN OF CLEVELAND	Government	1	$14,767
TOWN OF SPENCER	Religious	3	$11,229
TOWN OF LANDIS	Religious	1	$8,254
TOWN OF EAST SPENCER	Residential	1	$8,023
TOWN OF CHINA GROVE	Religious	1	$5,769
ROWAN COUNTY	Agricultural	1	$3,140

Table D- 52: High loss buildings at risk of 100-year hurricane winds

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Religious	24	$1,136,302
CITY OF SALISBURY	Commercial	111	$1,136,212
IREDELL COUNTY	Residential	235	$1,058,001
ROWAN COUNTY	Industrial	18	$1,043,292
TOWN OF MOORESVILLE	Commercial	174	$1,041,792
TOWN OF EAST SPENCER	Commercial	1	$801,015
TOWN OF MOORESVILLE	Government	17	$524,254
CITY OF STATESVILLE	Commercial	95	$413,024
ROWAN COUNTY	Government	20	$364,003
ROWAN COUNTY	Commercial	33	$236,649

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Utilities	3	$203,478
IREDELL COUNTY	Utilities	2	$202,865
CITY OF SALISBURY	Residential	77	$176,382
TOWN OF SPENCER	Commercial	11	$174,637
CITY OF SALISBURY	Government	35	$159,495
IREDELL COUNTY	Commercial	34	$156,239
CITY OF STATESVILLE	Industrial	53	$142,228
CITY OF STATESVILLE	Utilities	5	$141,908
TOWN OF TROUTMAN	Utilities	1	$118,136
IREDELL COUNTY	Industrial	24	$111,208
TOWN OF EAST SPENCER	Government	2	$101,638
CITY OF SALISBURY	Industrial	32	$97,031
TOWN OF CLEVELAND	Religious	1	$93,462
TOWN OF CLEVELAND	Residential	2	$82,661
ROWAN COUNTY	Residential	16	$64,392
CITY OF STATESVILLE	Residential	11	$52,859
CITY OF SALISBURY	Religious	14	$52,855
ROWAN COUNTY	Religious	11	$49,789
TOWN OF MOORESVILLE	Industrial	32	$45,609
IREDELL COUNTY	Government	27	$45,027
TOWN OF TROUTMAN	Residential	3	$40,356
TOWN OF LANDIS	Government	3	$38,406
CITY OF STATESVILLE	Government	29	$37,075
TOWN OF MOORESVILLE	Residential	13	$36,750
TOWN OF CLEVELAND	Industrial	6	$28,897
TOWN OF SPENCER	Government	4	$27,982
TOWN OF LANDIS	Commercial	1	$23,865
TOWN OF MOORESVILLE	Religious	20	$22,633
CITY OF STATESVILLE	Religious	19	$20,220
TOWN OF CHINA GROVE	Government	2	$13,209
TOWN OF CHINA GROVE	Commercial	5	$12,696
TOWN OF GRANITE QUARRY	Government	2	$11,794
CITY OF SALISBURY	Utilities	1	$10,929
TOWN OF TROUTMAN	Commercial	9	$10,667
TOWN OF SPENCER	Industrial	2	$8,183
TOWN OF GRANITE QUARRY	Industrial	1	$8,158
TOWN OF CLEVELAND	Commercial	2	$7,706
TOWN OF TROUTMAN	Industrial	5	$7,565
TOWN OF FAITH	Residential	1	$7,249
TOWN OF LANDIS	Residential	3	$7,004
TOWN OF LANDIS	Industrial	1	$6,721
TOWN OF SPENCER	Residential	2	$6,612
TOWN OF CHINA GROVE	Residential	3	$6,354
TOWN OF EAST SPENCER	Industrial	1	$5,754
ROWAN COUNTY	Utilities	2	$4,465
TOWN OF CHINA GROVE	Industrial	3	$4,000
TOWN OF ROCKWELL	Residential	3	$3,544
TOWN OF FAITH	Religious	2	$2,795
TOWN OF ROCKWELL	Religious	1	$2,682
TOWN OF ROCKWELL	Commercial	4	$2,515
TOWN OF TROUTMAN	Government	3	$2,476
TOWN OF ROCKWELL	Industrial	2	$2,250

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF TROUTMAN	Religious	3	$1,670
TOWN OF ROCKWELL	Government	1	$1,649
TOWN OF SPENCER	Religious	3	$1,028
TOWN OF GRANITE QUARRY	Commercial	1	$960
TOWN OF CLEVELAND	Government	1	$933
TOWN OF LANDIS	Religious	1	$506
TOWN OF CHINA GROVE	Religious	1	$405
TOWN OF EAST SPENCER	Residential	1	$275
ROWAN COUNTY	Agricultural	1	$111

Table D- 53: High loss buildings at risk of 50-year hurricane wind events

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF MOORESVILLE	Commercial	174	$323,546
IREDELL COUNTY	Residential	235	$321,241
CITY OF SALISBURY	Commercial	111	$246,559
IREDELL COUNTY	Religious	24	$226,676
ROWAN COUNTY	Industrial	18	$200,631
TOWN OF MOORESVILLE	Utilities	3	$184,980
TOWN OF EAST SPENCER	Commercial	1	$152,931
CITY OF STATESVILLE	Commercial	95	$149,106
TOWN OF MOORESVILLE	Government	17	$132,314
CITY OF STATESVILLE	Utilities	5	$129,007
TOWN OF TROUTMAN	Utilities	1	$107,397
IREDELL COUNTY	Utilities	2	$96,175
ROWAN COUNTY	Government	20	$70,179
CITY OF STATESVILLE	Industrial	53	$67,700
ROWAN COUNTY	Commercial	33	$54,835
IREDELL COUNTY	Industrial	24	$43,406
CITY OF SALISBURY	Residential	77	$42,121
TOWN OF MOORESVILLE	Industrial	32	$35,982
CITY OF SALISBURY	Government	35	$34,854
TOWN OF SPENCER	Commercial	11	$33,699
IREDELL COUNTY	Commercial	34	$33,461
CITY OF SALISBURY	Industrial	32	$27,634
IREDELL COUNTY	Government	27	$27,115
TOWN OF EAST SPENCER	Government	2	$19,191
CITY OF STATESVILLE	Government	29	$19,128
TOWN OF CLEVELAND	Religious	1	$17,762
ROWAN COUNTY	Residential	16	$16,951
TOWN OF TROUTMAN	Residential	3	$12,346
CITY OF STATESVILLE	Residential	11	$12,300
CITY OF SALISBURY	Religious	14	$11,047
TOWN OF CLEVELAND	Residential	2	$10,828
CITY OF STATESVILLE	Religious	19	$9,919
TOWN OF MOORESVILLE	Religious	20	$9,881
ROWAN COUNTY	Religious	11	$9,842
TOWN OF LANDIS	Government	3	$9,513
TOWN OF TROUTMAN	Commercial	9	$9,061
TOWN OF MOORESVILLE	Residential	13	$8,282
TOWN OF SPENCER	Government	4	$6,168
TOWN OF TROUTMAN	Industrial	5	$6,153
TOWN OF CLEVELAND	Industrial	6	$5,467
CITY OF SALISBURY	Utilities	1	$4,833

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF CHINA GROVE	Government	2	$4,580
TOWN OF GRANITE QUARRY	Industrial	1	$4,487
TOWN OF CHINA GROVE	Commercial	5	$3,773
TOWN OF LANDIS	Commercial	1	$3,396
ROWAN COUNTY	Utilities	2	$2,030
TOWN OF GRANITE QUARRY	Government	2	$1,918
TOWN OF EAST SPENCER	Industrial	1	$1,897
TOWN OF CHINA GROVE	Residential	2	$1,775
TOWN OF FAITH	Residential	1	$1,774
TOWN OF TROUTMAN	Religious	3	$1,518
TOWN OF CLEVELAND	Commercial	2	$1,511
TOWN OF TROUTMAN	Government	3	$1,394
TOWN OF CHINA GROVE	Industrial	3	$1,238
TOWN OF SPENCER	Industrial	2	$1,165
TOWN OF ROCKWELL	Industrial	2	$1,102
TOWN OF LANDIS	Residential	3	$1,038
TOWN OF ROCKWELL	Commercial	4	$1,009
TOWN OF LANDIS	Industrial	1	$882
TOWN OF SPENCER	Residential	2	$732
TOWN OF ROCKWELL	Government	1	$623
TOWN OF SPENCER	Religious	3	$444
TOWN OF ROCKWELL	Residential	3	$417
TOWN OF CLEVELAND	Government	1	$395
TOWN OF FAITH	Religious	2	$349
TOWN OF ROCKWELL	Religious	1	$348
TOWN OF GRANITE QUARRY	Commercial	1	$318
TOWN OF CHINA GROVE	Religious	1	$180
TOWN OF LANDIS	Religious	1	$157
TOWN OF EAST SPENCER	Residential	1	$28
ROWAN COUNTY	Agricultural	1	$11

Table D- 54: High loss buildings at risk of 25-year hurricane events

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Residential	235	$318,747
TOWN OF MOORESVILLE	Commercial	174	$280,790
CITY OF SALISBURY	Commercial	111	$246,559
IREDELL COUNTY	Religious	24	$224,388
ROWAN COUNTY	Industrial	18	$200,631
TOWN OF EAST SPENCER	Commercial	1	$152,931
CITY OF STATESVILLE	Commercial	95	$131,069
TOWN OF MOORESVILLE	Government	17	$126,439
TOWN OF MOORESVILLE	Utilities	3	$123,320
CITY OF STATESVILLE	Utilities	5	$86,005
TOWN OF TROUTMAN	Utilities	1	$71,598
ROWAN COUNTY	Government	20	$70,179
IREDELL COUNTY	Utilities	2	$64,117
ROWAN COUNTY	Commercial	33	$54,835
CITY OF STATESVILLE	Industrial	53	$51,140
CITY OF SALISBURY	Residential	77	$42,121
CITY OF SALISBURY	Government	35	$34,854
TOWN OF SPENCER	Commercial	11	$33,699
IREDELL COUNTY	Industrial	24	$30,670
IREDELL COUNTY	Commercial	34	$28,991

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Industrial	32	$27,634
TOWN OF MOORESVILLE	Industrial	32	$24,890
TOWN OF EAST SPENCER	Government	2	$19,191
IREDELL COUNTY	Government	27	$18,385
TOWN OF CLEVELAND	Religious	1	$17,762
ROWAN COUNTY	Residential	16	$16,951
CITY OF STATESVILLE	Government	29	$12,752
TOWN OF TROUTMAN	Residential	3	$12,346
CITY OF STATESVILLE	Residential	11	$11,523
CITY OF SALISBURY	Religious	14	$11,047
TOWN OF CLEVELAND	Residential	2	$10,828
ROWAN COUNTY	Religious	11	$9,842
TOWN OF LANDIS	Government	3	$9,513
TOWN OF MOORESVILLE	Religious	20	$7,182
TOWN OF MOORESVILLE	Residential	13	$6,869
CITY OF STATESVILLE	Religious	19	$6,612
TOWN OF SPENCER	Government	4	$6,168
TOWN OF TROUTMAN	Commercial	9	$6,041
TOWN OF CLEVELAND	Industrial	6	$5,467
CITY OF SALISBURY	Utilities	1	$4,833
TOWN OF CHINA GROVE	Government	2	$4,580
TOWN OF GRANITE QUARRY	Industrial	1	$4,487
TOWN OF TROUTMAN	Industrial	5	$4,102
TOWN OF CHINA GROVE	Commercial	5	$3,773
TOWN OF LANDIS	Commercial	1	$3,396
ROWAN COUNTY	Utilities	2	$2,030
TOWN OF GRANITE QUARRY	Government	2	$1,918
TOWN OF EAST SPENCER	Industrial	1	$1,897
TOWN OF CHINA GROVE	Residential	2	$1,775
TOWN OF FAITH	Residential	1	$1,774
TOWN OF CLEVELAND	Commercial	2	$1,511
TOWN OF CHINA GROVE	Industrial	3	$1,238
TOWN OF SPENCER	Industrial	2	$1,165
TOWN OF ROCKWELL	Industrial	2	$1,102
TOWN OF LANDIS	Residential	3	$1,038
TOWN OF TROUTMAN	Religious	3	$1,012
TOWN OF ROCKWELL	Commercial	4	$1,009
TOWN OF TROUTMAN	Government	3	$929
TOWN OF LANDIS	Industrial	1	$882
TOWN OF SPENCER	Residential	2	$732
TOWN OF ROCKWELL	Government	1	$623
TOWN OF SPENCER	Religious	3	$444
TOWN OF ROCKWELL	Residential	3	$417
TOWN OF CLEVELAND	Government	1	$395
TOWN OF FAITH	Religious	2	$349
TOWN OF ROCKWELL	Religious	1	$348
TOWN OF GRANITE QUARRY	Commercial	1	$318
TOWN OF CHINA GROVE	Religious	1	$180
TOWN OF LANDIS	Religious	1	$157
TOWN OF EAST SPENCER	Residential	1	$28
ROWAN COUNTY	Agricultural	1	$11

Table D- 55: Buildings at risk of 25-year thunderstorm damage

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$8,002,816	2,169	$2,681,696	541	$752,034	38,876	$11,436,545
IREDELL COUNTY	25,875	53,612	$9,630,127	1,174	$263,987	683	$639,788	55,469	$10,533,902
CITY OF SALISBURY	9,631	12,073	$3,108,777	1,446	$1,162,891	438	$327,756	13,957	$4,599,424
TOWN OF MOORESVILLE	5,526	12,730	$2,108,475	1,466	$829,277	241	$332,150	14,437	$3,269,901
CITY OF STATESVILLE	10,854	11,990	$1,887,559	1,837	$706,560	422	$84,252	14,249	$2,678,372
TOWN OF ROCKWELL	1,704	2,208	$749,378	156	$531,330	38	$14,475	2,402	$1,295,184
TOWN OF EAST SPENCER	1,009	945	$293,178	33	$867,958	37	$122,433	1,015	$1,283,569
TOWN OF GRANITE QUARRY	1,467	2,175	$653,070	142	$195,025	33	$370,970	2,350	$1,219,065
TOWN OF SPENCER	1,982	1,832	$700,638	132	$294,669	46	$62,096	2,010	$1,057,403
TOWN OF CHINA GROVE	2,524	2,287	$515,894	203	$72,047	56	$23,700	2,546	$611,641
TOWN OF FAITH	1,150	1,500	$341,715	76	$61,000	13	$3,583	1,589	$406,298
TOWN OF LANDIS	1,387	1,393	$270,462	112	$59,640	39	$30,121	1,544	$360,223
TOWN OF TROUTMAN	2,404	2,151	$277,687	229	$32,594	58	$8,551	2,438	$318,832
TOWN OF CLEVELAND	812	729	$157,487	58	$31,921	25	$48,651	812	$238,059
TOWN OF HARMONY	438	376	$47,559	41	$2,677	27	$2,088	444	$52,324
TOWN OF LOVE VALLEY	258	236	$19,413	21	$965	1	$31	258	$20,409

Table D- 56: Buildings at risk of 50-year thunderstorms

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$12,862,341	2,169	$5,439,776	541	$1,562,250	38,876	$19,864,367
IREDELL COUNTY	25,875	53,612	$17,317,546	1,174	$533,284	683	$1,329,535	55,469	$19,180,366
CITY OF SALISBURY	9,631	12,073	$4,726,070	1,446	$2,285,022	438	$585,742	13,957	$7,596,834
TOWN OF MOORESVILLE	5,526	12,730	$3,938,602	1,466	$1,577,574	241	$651,685	14,437	$6,167,861
CITY OF STATESVILLE	10,854	11,990	$3,390,798	1,837	$1,261,182	422	$156,778	14,249	$4,808,757

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF ROCKWELL	1,704	2,208	$765,387	156	$549,439	38	$14,475	2,402	$1,329,301
TOWN OF EAST SPENCER	1,009	945	$293,178	33	$867,958	37	$122,433	1,015	$1,283,569
TOWN OF GRANITE QUARRY	1,467	2,175	$707,615	142	$204,626	33	$370,983	2,350	$1,283,224
TOWN OF CHINA GROVE	2,524	2,287	$880,662	203	$148,571	56	$45,934	2,546	$1,075,167
TOWN OF SPENCER	1,982	1,832	$700,638	132	$294,669	46	$62,096	2,010	$1,057,403
TOWN OF LANDIS	1,387	1,393	$495,617	112	$132,717	39	$62,441	1,544	$690,774
TOWN OF FAITH	1,150	1,500	$559,365	76	$121,944	13	$7,720	1,589	$689,028
TOWN OF TROUTMAN	2,404	2,151	$510,013	229	$55,957	58	$15,887	2,438	$581,856
TOWN OF CLEVELAND	812	729	$303,619	58	$71,508	25	$109,003	812	$484,130
TOWN OF HARMONY	438	376	$82,592	41	$3,923	27	$3,267	444	$89,782
TOWN OF LOVE VALLEY	258	236	$34,531	21	$1,775	1	$19	258	$36,325

Table D- 57: Buildings at risk of 100-year thunderstorm winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$19,332,501	2,169	$9,939,017	541	$2,856,581	38,876	$32,128,099
IREDELL COUNTY	25,875	53,612	$28,020,036	1,174	$1,066,869	683	$2,404,916	55,469	$31,491,820
CITY OF SALISBURY	9,631	12,073	$7,560,847	1,446	$4,636,570	438	$1,178,536	13,957	$13,375,953
TOWN OF MOORESVILLE	5,526	12,730	$6,532,878	1,466	$2,941,215	241	$1,177,918	14,437	$10,652,012
CITY OF STATESVILLE	10,854	11,990	$5,501,965	1,837	$2,257,438	422	$301,268	14,249	$8,060,672
TOWN OF EAST SPENCER	1,009	945	$486,158	33	$1,774,999	37	$253,827	1,015	$2,514,985
TOWN OF ROCKWELL	1,704	2,208	$1,234,660	156	$1,014,811	38	$29,291	2,402	$2,278,762
TOWN OF GRANITE QUARRY	1,467	2,175	$1,165,356	142	$405,427	33	$673,173	2,350	$2,243,955
TOWN OF SPENCER	1,982	1,832	$1,100,795	132	$602,278	46	$127,262	2,010	$1,830,336
TOWN OF CHINA GROVE	2,524	2,287	$1,392,197	203	$285,140	56	$92,142	2,546	$1,769,478
TOWN OF LANDIS	1,387	1,393	$810,306	112	$274,697	39	$125,902	1,544	$1,210,904

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF FAITH	1,150	1,500	$882,072	76	$239,282	13	$16,132	1,589	$1,137,487
TOWN OF TROUTMAN	2,404	2,151	$835,963	229	$103,189	58	$32,190	2,438	$971,342
TOWN OF CLEVELAND	812	729	$545,906	58	$151,582	25	$225,496	812	$922,984
TOWN OF HARMONY	438	376	$128,849	41	$6,659	27	$6,999	444	$142,507
TOWN OF LOVE VALLEY	258	236	$55,083	21	$3,371	1	$61	258	$58,515

Table D- 58: Buildings at risk of 300 year thunderstorm winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$44,798,476	2,169	$28,124,707	541	$8,296,145	38,876	$81,219,328
IREDELL COUNTY	25,875	53,612	$66,391,877	1,174	$3,779,493	683	$5,840,461	55,469	$76,011,830
CITY OF SALISBURY	9,631	12,073	$19,573,905	1,446	$15,266,889	438	$3,868,921	13,957	$38,709,715
TOWN OF MOORESVILLE	5,526	12,730	$16,014,343	1,466	$9,002,991	241	$3,042,810	14,437	$28,060,144
CITY OF STATESVILLE	10,854	11,990	$12,657,453	1,837	$7,075,680	422	$1,123,965	14,249	$20,857,098
TOWN OF EAST SPENCER	1,009	945	$1,329,299	33	$5,154,619	37	$784,480	1,015	$7,268,397
TOWN OF ROCKWELL	1,704	2,208	$3,220,212	156	$2,691,278	38	$129,424	2,402	$6,040,914
TOWN OF GRANITE QUARRY	1,467	2,175	$2,914,663	142	$1,171,592	33	$1,558,222	2,350	$5,644,478
TOWN OF SPENCER	1,982	1,832	$2,885,715	132	$1,890,212	46	$465,223	2,010	$5,241,150
TOWN OF CHINA GROVE	2,524	2,287	$3,657,300	203	$860,716	56	$356,765	2,546	$4,874,781
TOWN OF LANDIS	1,387	1,393	$2,034,523	112	$992,451	39	$443,128	1,544	$3,470,102
TOWN OF CLEVELAND	812	729	$1,636,710	58	$581,980	25	$701,614	812	$2,920,304
TOWN OF FAITH	1,150	1,500	$2,131,688	76	$670,200	13	$60,227	1,589	$2,862,115
TOWN OF TROUTMAN	2,404	2,151	$1,874,218	229	$377,303	58	$117,610	2,438	$2,369,131
TOWN OF HARMONY	438	376	$280,485	41	$19,630	27	$37,917	444	$338,032

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
TOWN OF LOVE VALLEY	258	236	$129,482	21	$10,360	1	$169	258	$140,010

Table D- 59: Buildings at risk of 700-year thunderstorm winds

Jurisdiction	Pre-Firm Buildings at Risk	Residential Buildings at Risk		Commercial Buildings at Risk		Public Buildings at Risk		Total Buildings at Risk	
		Number	Damages	Number	Damages	Number	Damages	Number	Damages
ROWAN COUNTY	12,053	36,166	$73,553,696	2,169	$42,706,015	541	$12,803,182	38,876	$129,062,892
IREDELL COUNTY	25,875	53,612	$92,126,798	1,174	$5,299,077	683	$7,702,577	55,469	$105,128,451
CITY OF SALISBURY	9,631	12,073	$33,342,360	1,446	$24,927,530	438	$6,348,950	13,957	$64,618,841
TOWN OF MOORESVILLE	5,526	12,730	$25,877,299	1,466	$14,814,870	241	$4,428,474	14,437	$45,120,643
CITY OF STATESVILLE	10,854	11,990	$15,226,687	1,837	$9,273,668	422	$1,500,460	14,249	$26,000,815
TOWN OF EAST SPENCER	1,009	945	$2,267,284	33	$7,434,274	37	$1,192,126	1,015	$10,893,685
TOWN OF ROCKWELL	1,704	2,208	$5,474,338	156	$3,862,296	38	$258,140	2,402	$9,594,774
TOWN OF SPENCER	1,982	1,832	$4,975,382	132	$2,907,508	46	$803,426	2,010	$8,686,316
TOWN OF CHINA GROVE	2,524	2,287	$6,495,900	203	$1,387,636	56	$679,376	2,546	$8,562,912
TOWN OF GRANITE QUARRY	1,467	2,175	$4,680,536	142	$1,734,146	33	$2,076,879	2,350	$8,491,560
TOWN OF LANDIS	1,387	1,393	$3,422,633	112	$1,742,962	39	$785,300	1,544	$5,950,895
TOWN OF CLEVELAND	812	729	$2,779,131	58	$1,050,316	25	$1,065,587	812	$4,895,034
TOWN OF FAITH	1,150	1,500	$3,539,110	76	$969,229	13	$106,332	1,589	$4,614,672
TOWN OF TROUTMAN	2,404	2,151	$2,687,926	229	$706,311	58	$201,543	2,438	$3,595,781
TOWN OF HARMONY	438	376	$427,748	41	$34,127	27	$82,217	444	$544,093
TOWN OF LOVE VALLEY	258	236	$129,486	21	$10,333	1	$169	258	$139,989

Table D- 60: Population at risk of 25, 50-, 100-, 300-, and 700-year thunderstorm winds

Jurisdiction	25-year thunderstorm winds			50-year thunderstorm winds			100-year thunderstorm winds			300-year thunderstorm winds			700-year thunderstorm winds		
	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk	Elderly at risk	Children at risk	Total at risk
CITY OF SALISBURY	6,224	2,175	35,069	6,224	2,175	35,069	6,224	2,175	35,069	6,224	2,175	35,069	6,224	2,175	35,069
CITY OF STATESVILLE	5,094	1,554	31,109	5,094	1,554	31,109	5,094	1,554	31,109	5,094	1,554	31,109	5,094	1,554	31,109
IREDELL COUNTY	20,988	6,824	129,661	20,988	6,824	129,661	20,988	6,824	129,661	20,988	6,824	129,661	20,988	6,824	129,661
ROWAN COUNTY	14,834	4,110	81,273	14,834	4,110	81,273	14,834	4,110	81,273	14,834	4,110	81,273	14,834	4,110	81,273
TOWN OF CHINA GROVE	682	304	4,198	682	304	4,198	682	304	4,198	682	304	4,198	682	304	4,198
TOWN OF CLEVELAND	101	33	665	101	33	665	101	33	665	101	33	665	101	33	665
TOWN OF EAST SPENCER	392	66	1,622	392	66	1,622	392	66	1,622	392	66	1,622	392	66	1,622
TOWN OF FAITH	367	132	2,502	367	132	2,502	367	132	2,502	367	132	2,502	367	132	2,502
TOWN OF GRANITE QUARRY	546	213	4,543	546	213	4,543	546	213	4,543	546	213	4,543	546	213	4,543
TOWN OF HARMONY	17	4	97	17	4	97	17	4	97	17	4	97	17	4	97
TOWN OF LANDIS	452	215	2,653	452	215	2,653	452	215	2,653	452	215	2,653	452	215	2,653
TOWN OF LOVE VALLEY	8	3	56	8	3	56	8	3	56	8	3	56	8	3	56
TOWN OF MOORESVILLE	5,553	2,355	40,540	5,553	2,355	40,540	5,553	2,355	40,540	5,553	2,355	40,540	5,553	2,355	40,540
TOWN OF ROCKWELL	453	132	2,788	453	132	2,788	453	132	2,788	453	132	2,788	453	132	2,788
TOWN OF SPENCER	919	193	4,204	919	193	4,204	919	193	4,204	919	193	4,204	919	193	4,204
TOWN OF TROUTMAN	761	297	4,574	761	297	4,574	6,224	2,175	35,069	761	297	4,574	761	297	4,574

Table D- 61: High loss buildings at risk of 25-year thunderstorm winds

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF EAST SPENCER	Commercial	1	$801,015
IREDELL COUNTY	Residential	235	$610,659
TOWN OF MOORESVILLE	Commercial	174	$550,928
CITY OF SALISBURY	Commercial	111	$536,969
IREDELL COUNTY	Religious	24	$532,514
ROWAN COUNTY	Industrial	18	$467,187
TOWN OF MOORESVILLE	Government	17	$266,053
CITY OF STATESVILLE	Commercial	95	$234,199
ROWAN COUNTY	Government	20	$184,152
TOWN OF MOORESVILLE	Utilities	3	$176,776
TOWN OF SPENCER	Commercial	11	$174,637
CITY OF STATESVILLE	Utilities	5	$130,521
ROWAN COUNTY	Commercial	33	$116,683
IREDELL COUNTY	Utilities	2	$107,037
TOWN OF EAST SPENCER	Government	2	$101,638
CITY OF SALISBURY	Government	35	$96,543
TOWN OF TROUTMAN	Utilities	1	$95,917
CITY OF SALISBURY	Residential	77	$88,803
CITY OF STATESVILLE	Industrial	53	$88,194
IREDELL COUNTY	Commercial	34	$69,418
IREDELL COUNTY	Industrial	24	$60,949
CITY OF SALISBURY	Industrial	32	$51,173
TOWN OF CLEVELAND	Religious	1	$41,261
TOWN OF MOORESVILLE	Industrial	32	$38,310
ROWAN COUNTY	Residential	16	$33,823
TOWN OF CLEVELAND	Residential	2	$31,330
IREDELL COUNTY	Government	27	$29,624
TOWN OF SPENCER	Government	4	$27,982
CITY OF STATESVILLE	Residential	11	$25,458
CITY OF SALISBURY	Religious	14	$25,428
ROWAN COUNTY	Religious	11	$25,147
TOWN OF TROUTMAN	Residential	3	$23,933
CITY OF STATESVILLE	Government	29	$22,640
TOWN OF LANDIS	Government	3	$19,072
TOWN OF MOORESVILLE	Residential	13	$16,784
TOWN OF MOORESVILLE	Religious	20	$12,853
TOWN OF CLEVELAND	Industrial	6	$12,483
CITY OF STATESVILLE	Religious	19	$12,129
TOWN OF GRANITE QUARRY	Government	2	$11,794
TOWN OF LANDIS	Commercial	1	$9,534
TOWN OF TROUTMAN	Commercial	9	$8,950
TOWN OF SPENCER	Industrial	2	$8,183
TOWN OF CHINA GROVE	Government	2	$7,818
CITY OF SALISBURY	Utilities	1	$7,132
TOWN OF CHINA GROVE	Commercial	5	$6,647
TOWN OF SPENCER	Residential	2	$6,612
TOWN OF TROUTMAN	Industrial	5	$6,589
TOWN OF GRANITE QUARRY	Industrial	1	$6,234
TOWN OF EAST SPENCER	Industrial	1	$5,754
TOWN OF CHINA GROVE	Residential	3	$3,583
TOWN OF ROCKWELL	Residential	3	$3,544
TOWN OF FAITH	Residential	1	$3,407

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF CLEVELAND	Commercial	2	$3,395
TOWN OF LANDIS	Residential	3	$3,005
ROWAN COUNTY	Utilities	2	$2,976
TOWN OF ROCKWELL	Religious	1	$2,682
TOWN OF LANDIS	Industrial	1	$2,545
TOWN OF ROCKWELL	Commercial	4	$2,515
TOWN OF ROCKWELL	Industrial	2	$2,250
TOWN OF CHINA GROVE	Industrial	3	$2,091
TOWN OF ROCKWELL	Government	1	$1,649
TOWN OF TROUTMAN	Religious	3	$1,505
TOWN OF TROUTMAN	Government	3	$1,121
TOWN OF FAITH	Religious	2	$1,046
TOWN OF SPENCER	Religious	3	$1,028
TOWN OF GRANITE QUARRY	Commercial	1	$960
TOWN OF CLEVELAND	Government	1	$602
TOWN OF EAST SPENCER	Residential	1	$275
TOWN OF CHINA GROVE	Religious	1	$268
TOWN OF LANDIS	Religious	1	$264
ROWAN COUNTY	Agricultural	1	$36

Table D- 62: High loss buildings at risk of 50-year thunderstorm winds

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Religious	24	$1,137,570
CITY OF SALISBURY	Commercial	111	$1,136,212
TOWN OF MOORESVILLE	Commercial	174	$1,071,663
IREDELL COUNTY	Residential	235	$1,057,732
ROWAN COUNTY	Industrial	18	$1,043,292
TOWN OF EAST SPENCER	Commercial	1	$801,015
TOWN OF MOORESVILLE	Government	17	$526,535
CITY OF STATESVILLE	Commercial	95	$427,437
ROWAN COUNTY	Government	20	$384,956
TOWN OF MOORESVILLE	Utilities	3	$262,276
ROWAN COUNTY	Commercial	33	$249,377
IREDELL COUNTY	Utilities	2	$207,832
CITY OF STATESVILLE	Utilities	5	$203,409
CITY OF SALISBURY	Residential	77	$176,382
TOWN OF SPENCER	Commercial	11	$174,637
CITY OF SALISBURY	Government	35	$159,495
IREDELL COUNTY	Commercial	34	$157,556
CITY OF STATESVILLE	Industrial	53	$157,321
TOWN OF TROUTMAN	Utilities	1	$137,116
IREDELL COUNTY	Industrial	24	$116,301
TOWN OF EAST SPENCER	Government	2	$101,638
CITY OF SALISBURY	Industrial	32	$97,031
TOWN OF CLEVELAND	Religious	1	$93,462
TOWN OF CLEVELAND	Residential	2	$82,661
ROWAN COUNTY	Residential	16	$64,728
TOWN OF MOORESVILLE	Industrial	32	$59,746
CITY OF STATESVILLE	Residential	11	$52,859
CITY OF SALISBURY	Religious	14	$52,855
ROWAN COUNTY	Religious	11	$51,986
IREDELL COUNTY	Government	27	$49,512
CITY OF STATESVILLE	Government	29	$41,931

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF TROUTMAN	Residential	3	$40,356
TOWN OF LANDIS	Government	3	$38,406
TOWN OF MOORESVILLE	Residential	13	$38,058
TOWN OF CLEVELAND	Industrial	6	$28,897
TOWN OF SPENCER	Government	4	$27,982
TOWN OF MOORESVILLE	Religious	20	$24,181
TOWN OF LANDIS	Commercial	1	$23,865
CITY OF STATESVILLE	Religious	19	$23,070
TOWN OF TROUTMAN	Commercial	9	$13,937
TOWN OF CHINA GROVE	Government	2	$13,209
TOWN OF CHINA GROVE	Commercial	5	$12,696
TOWN OF GRANITE QUARRY	Government	2	$11,794
CITY OF SALISBURY	Utilities	1	$10,929
TOWN OF TROUTMAN	Industrial	5	$10,038
TOWN OF SPENCER	Industrial	2	$8,183
TOWN OF GRANITE QUARRY	Industrial	1	$8,158
TOWN OF CLEVELAND	Commercial	2	$7,706
TOWN OF FAITH	Residential	1	$7,249
TOWN OF LANDIS	Residential	3	$7,004
TOWN OF LANDIS	Industrial	1	$6,721
TOWN OF SPENCER	Residential	2	$6,612
TOWN OF CHINA GROVE	Residential	3	$6,354
TOWN OF EAST SPENCER	Industrial	1	$5,754
ROWAN COUNTY	Utilities	2	$4,465
TOWN OF CHINA GROVE	Industrial	3	$4,000
TOWN OF ROCKWELL	Residential	3	$3,544
TOWN OF FAITH	Religious	2	$2,795
TOWN OF ROCKWELL	Religious	1	$2,682
TOWN OF ROCKWELL	Commercial	4	$2,515
TOWN OF TROUTMAN	Religious	3	$2,369
TOWN OF ROCKWELL	Industrial	2	$2,250
TOWN OF TROUTMAN	Government	3	$2,111
TOWN OF ROCKWELL	Government	1	$1,649
TOWN OF SPENCER	Religious	3	$1,028
TOWN OF GRANITE QUARRY	Commercial	1	$960
TOWN OF CLEVELAND	Government	1	$933
TOWN OF LANDIS	Religious	1	$506
TOWN OF CHINA GROVE	Religious	1	$405
TOWN OF EAST SPENCER	Residential	1	$275
ROWAN COUNTY	Agricultural	1	$111

Table D- 63: High loss buildings at risk of 100 year thunderstorm winds

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$2,347,749
ROWAN COUNTY	Industrial	18	$2,095,066
IREDELL COUNTY	Religious	24	$2,048,355
TOWN OF MOORESVILLE	Commercial	174	$2,003,984
IREDELL COUNTY	Residential	235	$1,730,344
TOWN OF EAST SPENCER	Commercial	1	$1,639,484
TOWN OF MOORESVILLE	Government	17	$944,689
CITY OF STATESVILLE	Commercial	95	$761,613
ROWAN COUNTY	Government	20	$708,440
ROWAN COUNTY	Commercial	33	$494,624

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Utilities	2	$494,012
TOWN OF MOORESVILLE	Utilities	3	$432,142
TOWN OF SPENCER	Commercial	11	$363,637
CITY OF STATESVILLE	Utilities	5	$349,602
CITY OF SALISBURY	Government	35	$326,299
CITY OF SALISBURY	Residential	77	$325,961
IREDELL COUNTY	Commercial	34	$324,255
CITY OF STATESVILLE	Industrial	53	$291,918
IREDELL COUNTY	Industrial	24	$228,555
TOWN OF TROUTMAN	Utilities	1	$225,245
TOWN OF EAST SPENCER	Government	2	$212,846
TOWN OF CLEVELAND	Religious	1	$192,897
CITY OF SALISBURY	Industrial	32	$188,156
TOWN OF CLEVELAND	Residential	2	$184,080
ROWAN COUNTY	Residential	16	$123,068
CITY OF SALISBURY	Religious	14	$108,101
TOWN OF MOORESVILLE	Industrial	32	$108,078
ROWAN COUNTY	Religious	11	$101,583
CITY OF STATESVILLE	Residential	11	$96,476
IREDELL COUNTY	Government	27	$90,067
CITY OF STATESVILLE	Government	29	$80,397
TOWN OF LANDIS	Government	3	$76,314
TOWN OF MOORESVILLE	Residential	13	$75,773
TOWN OF CLEVELAND	Industrial	6	$63,474
TOWN OF TROUTMAN	Residential	3	$62,542
TOWN OF SPENCER	Government	4	$60,717
TOWN OF LANDIS	Commercial	1	$52,583
TOWN OF MOORESVILLE	Religious	20	$46,044
CITY OF STATESVILLE	Religious	19	$45,533
TOWN OF CHINA GROVE	Government	2	$27,250
TOWN OF GRANITE QUARRY	Government	2	$25,971
TOWN OF TROUTMAN	Commercial	9	$25,295
TOWN OF CHINA GROVE	Commercial	5	$25,024
TOWN OF SPENCER	Industrial	2	$18,962
CITY OF SALISBURY	Utilities	1	$18,446
TOWN OF TROUTMAN	Industrial	5	$16,957
TOWN OF CLEVELAND	Commercial	2	$16,453
TOWN OF SPENCER	Residential	2	$15,706
TOWN OF FAITH	Residential	1	$15,211
TOWN OF LANDIS	Industrial	1	$14,888
TOWN OF LANDIS	Residential	3	$13,641
TOWN OF GRANITE QUARRY	Industrial	1	$12,167
TOWN OF EAST SPENCER	Industrial	1	$11,374
TOWN OF CHINA GROVE	Residential	3	$10,506
TOWN OF ROCKWELL	Residential	3	$8,452
TOWN OF CHINA GROVE	Industrial	3	$8,289
ROWAN COUNTY	Utilities	2	$7,361
TOWN OF FAITH	Religious	2	$6,579
TOWN OF ROCKWELL	Religious	1	$6,185
TOWN OF TROUTMAN	Government	3	$5,649
TOWN OF ROCKWELL	Commercial	4	$4,643
TOWN OF TROUTMAN	Religious	3	$4,209

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF ROCKWELL	Government	1	$3,523
TOWN OF ROCKWELL	Industrial	2	$3,484
TOWN OF GRANITE QUARRY	Commercial	1	$1,895
TOWN OF SPENCER	Religious	3	$1,777
TOWN OF CLEVELAND	Government	1	$1,578
TOWN OF LANDIS	Religious	1	$985
TOWN OF EAST SPENCER	Residential	1	$757
TOWN OF CHINA GROVE	Religious	1	$668
ROWAN COUNTY	Agricultural	1	$303

Table D- 64: High loss buildings at risk of 300-year thunderstorm winds

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$7,848,380
TOWN OF MOORESVILLE	Commercial	174	$5,930,922
ROWAN COUNTY	Industrial	18	$5,916,940
IREDELL COUNTY	Residential	235	$5,169,901
TOWN OF EAST SPENCER	Commercial	1	$4,724,843
IREDELL COUNTY	Religious	24	$4,645,765
IREDELL COUNTY	Utilities	2	$3,016,864
TOWN OF MOORESVILLE	Government	17	$2,327,759
CITY OF STATESVILLE	Commercial	95	$2,198,862
ROWAN COUNTY	Government	20	$2,074,513
ROWAN COUNTY	Commercial	33	$1,786,091
TOWN OF MOORESVILLE	Utilities	3	$1,607,694
CITY OF STATESVILLE	Utilities	5	$1,501,422
TOWN OF SPENCER	Commercial	11	$1,141,092
IREDELL COUNTY	Commercial	34	$1,054,776
CITY OF STATESVILLE	Industrial	53	$1,050,393
CITY OF SALISBURY	Government	35	$1,048,023
CITY OF SALISBURY	Residential	77	$946,120
IREDELL COUNTY	Industrial	24	$828,436
TOWN OF TROUTMAN	Utilities	1	$725,623
TOWN OF CLEVELAND	Residential	2	$688,010
CITY OF SALISBURY	Industrial	32	$635,049
TOWN OF EAST SPENCER	Government	2	$622,459
TOWN OF CLEVELAND	Religious	1	$572,401
TOWN OF MOORESVILLE	Industrial	32	$433,709
ROWAN COUNTY	Residential	16	$425,723
CITY OF SALISBURY	Religious	14	$378,267
ROWAN COUNTY	Religious	11	$323,236
IREDELL COUNTY	Government	27	$318,880
CITY OF STATESVILLE	Government	29	$301,769
TOWN OF LANDIS	Government	3	$271,086
TOWN OF CLEVELAND	Industrial	6	$266,496
TOWN OF SPENCER	Government	4	$254,826
CITY OF STATESVILLE	Residential	11	$244,992
TOWN OF MOORESVILLE	Residential	13	$239,248
TOWN OF LANDIS	Commercial	1	$206,236
CITY OF STATESVILLE	Religious	19	$183,954
TOWN OF TROUTMAN	Residential	3	$152,444
TOWN OF MOORESVILLE	Religious	20	$151,329
TOWN OF CHINA GROVE	Government	2	$129,931
TOWN OF TROUTMAN	Commercial	9	$111,208

Jurisdiction	Type	Number of Buildings	Damages
TOWN OF CHINA GROVE	Commercial	5	$101,335
TOWN OF GRANITE QUARRY	Government	2	$97,402
TOWN OF SPENCER	Industrial	2	$80,402
CITY OF SALISBURY	Utilities	1	$78,343
TOWN OF CLEVELAND	Commercial	2	$66,144
TOWN OF SPENCER	Residential	2	$58,225
TOWN OF FAITH	Residential	1	$57,393
TOWN OF TROUTMAN	Industrial	5	$55,768
TOWN OF LANDIS	Industrial	1	$53,376
TOWN OF EAST SPENCER	Industrial	1	$47,678
TOWN OF LANDIS	Residential	3	$40,078
TOWN OF CHINA GROVE	Industrial	3	$37,388
TOWN OF ROCKWELL	Residential	3	$35,657
TOWN OF GRANITE QUARRY	Industrial	1	$30,819
ROWAN COUNTY	Utilities	2	$28,464
TOWN OF CHINA GROVE	Residential	3	$28,257
TOWN OF FAITH	Religious	2	$26,733
TOWN OF ROCKWELL	Religious	1	$25,134
TOWN OF TROUTMAN	Government	3	$24,545
TOWN OF ROCKWELL	Government	1	$24,284
TOWN OF ROCKWELL	Commercial	4	$21,204
TOWN OF TROUTMAN	Religious	3	$17,387
TOWN OF ROCKWELL	Industrial	2	$10,018
TOWN OF GRANITE QUARRY	Commercial	1	$7,909
TOWN OF CLEVELAND	Government	1	$6,708
TOWN OF SPENCER	Religious	3	$6,201
TOWN OF LANDIS	Religious	1	$4,241
TOWN OF EAST SPENCER	Residential	1	$4,091
TOWN OF CHINA GROVE	Religious	1	$2,654
ROWAN COUNTY	Agricultural	1	$1,620

Table D- 65: High loss buildings at risk of 700-year thunderstorm winds

Jurisdiction	Type	Number of Buildings	Damages
CITY OF SALISBURY	Commercial	111	$12,731,462
TOWN OF MOORESVILLE	Commercial	174	$9,437,477
IREDELL COUNTY	Residential	235	$8,518,353
ROWAN COUNTY	Industrial	18	$8,454,457
TOWN OF EAST SPENCER	Commercial	1	$6,758,783
IREDELL COUNTY	Religious	24	$6,006,249
TOWN OF MOORESVILLE	Utilities	3	$3,352,461
ROWAN COUNTY	Government	20	$3,294,805
TOWN OF MOORESVILLE	Government	17	$3,257,993
CITY OF STATESVILLE	Utilities	5	$3,194,432
ROWAN COUNTY	Commercial	33	$3,039,088
IREDELL COUNTY	Utilities	2	$3,016,864
CITY OF STATESVILLE	Commercial	95	$2,770,600
TOWN OF SPENCER	Commercial	11	$1,719,555
CITY OF SALISBURY	Government	35	$1,665,373
CITY OF STATESVILLE	Industrial	53	$1,597,700
CITY OF SALISBURY	Residential	77	$1,545,496
IREDELL COUNTY	Commercial	34	$1,367,267
TOWN OF TROUTMAN	Utilities	1	$1,359,536
TOWN OF CLEVELAND	Residential	2	$1,189,084

Jurisdiction	Type	Number of Buildings	Damages
IREDELL COUNTY	Industrial	24	$1,169,452
CITY OF SALISBURY	Industrial	32	$1,101,171
TOWN OF EAST SPENCER	Government	2	$890,719
TOWN OF MOORESVILLE	Industrial	32	$869,206
TOWN OF CLEVELAND	Religious	1	$831,719
ROWAN COUNTY	Residential	16	$771,491
CITY OF SALISBURY	Religious	14	$656,193
IREDELL COUNTY	Government	27	$518,966
ROWAN COUNTY	Religious	11	$512,692
TOWN OF CLEVELAND	Industrial	6	$508,233
TOWN OF LANDIS	Government	3	$491,685
TOWN OF SPENCER	Government	4	$465,498
TOWN OF MOORESVILLE	Residential	13	$403,385
CITY OF STATESVILLE	Government	29	$384,456
TOWN OF LANDIS	Commercial	1	$376,385
CITY OF STATESVILLE	Residential	11	$335,390
TOWN OF CHINA GROVE	Government	2	$272,971
TOWN OF TROUTMAN	Residential	3	$256,549
TOWN OF MOORESVILLE	Religious	20	$255,932
TOWN OF TROUTMAN	Commercial	9	$229,861
CITY OF STATESVILLE	Religious	19	$223,675
TOWN OF CHINA GROVE	Commercial	5	$195,646
CITY OF SALISBURY	Utilities	1	$172,579
TOWN OF GRANITE QUARRY	Government	2	$169,265
TOWN OF SPENCER	Industrial	2	$150,044
TOWN OF CLEVELAND	Commercial	2	$120,650
TOWN OF TROUTMAN	Industrial	5	$100,313
TOWN OF FAITH	Residential	1	$98,393
TOWN OF SPENCER	Residential	2	$96,907
TOWN OF EAST SPENCER	Industrial	1	$89,030
TOWN OF LANDIS	Industrial	1	$88,826
TOWN OF CHINA GROVE	Industrial	3	$73,811
TOWN OF ROCKWELL	Residential	3	$63,967
TOWN OF LANDIS	Residential	3	$63,374
ROWAN COUNTY	Utilities	2	$60,863
TOWN OF ROCKWELL	Government	1	$60,792
TOWN OF GRANITE QUARRY	Industrial	1	$49,367
TOWN OF FAITH	Religious	2	$47,474
TOWN OF CHINA GROVE	Residential	3	$47,056
TOWN OF ROCKWELL	Commercial	4	$45,092
TOWN OF ROCKWELL	Religious	1	$45,041
TOWN OF TROUTMAN	Government	3	$39,744
TOWN OF TROUTMAN	Religious	3	$34,760
TOWN OF ROCKWELL	Industrial	2	$17,534
TOWN OF GRANITE QUARRY	Commercial	1	$14,790
TOWN OF CLEVELAND	Government	1	$14,767
TOWN OF SPENCER	Religious	3	$11,229
TOWN OF LANDIS	Religious	1	$8,254
TOWN OF EAST SPENCER	Residential	1	$8,023
TOWN OF CHINA GROVE	Religious	1	$5,769
ROWAN COUNTY	Agricultural	1	$3,140

Table D- 66: earthquakes in the planning area from 2019-2023 within 100 miles[1]

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2021-04-17 8:33:38	1.96	md	0.08	0	Iredell
2022-08-16 10:08:20	1.8	md	0.09	0	Iredell
2021-02-26 12:52:43	1.63	md	0.05	0.752283664	Iredell
2022-05-11 4:41:51	2.15	md	0.04	0.834384091	Iredell
2022-05-18 10:58:37	1.99	md	0.08	1.270140726	Iredell
2022-05-30 6:07:30	1.77	md	0.31	2.551928999	Iredell
2019-10-13 3:02:34	1.69	md	0.09	13.92166728	Iredell
2020-09-20 20:10:49	2.05	md	5.17	16.54783321	Iredell
2021-11-24 9:12:18	1.66	md	0.74	19.98345212	Iredell
2020-03-15 21:37:03	1.94	md	5.81	20.75287124	Iredell
2021-06-21 4:34:37	1.62	md	1.5	21.49909335	Iredell
2021-06-21 4:30:48	1.81	md	1.33	21.61697121	Iredell
2021-11-05 12:03:06	2.01	md	10.31	26.48585731	Iredell
2020-08-09 15:45:56	1.8	md	5.22	26.82969298	Iredell
2023-05-12 9:56:05	2.12	md	0.04	27.50857338	Iredell
2021-07-30 14:36:11	1.65	md	0.04	27.70196918	Iredell
2019-10-06 4:55:10	2.08	md	4.78	27.8282439	Iredell
2020-08-09 6:02:15	1.96	md	6.75	28.06009268	Iredell
2021-02-09 0:31:10	1.79	md	0.04	28.22816742	Iredell
2022-03-13 18:15:14	2.06	md	4.35	28.27746449	Iredell
2021-03-04 7:13:54	2	md	0.08	28.27809806	Iredell
2021-02-27 1:50:16	1.53	md	0.03	28.30227838	Iredell
2021-04-21 19:24:39	2.3	md	0.08	28.37459681	Iredell
2020-08-10 6:05:09	1.97	md	5.3	28.51182992	Iredell
2020-08-12 6:11:45	2.15	md	0.05	28.53109572	Iredell
2020-08-09 4:43:39	2.26	md	13.72	28.55355558	Iredell
2020-10-13 12:51:07	2.4	md	6.24	28.66736645	Iredell
2020-08-08 11:12:32	2.3	md	2.74	28.68897964	Iredell

[1] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2021-02-25 19:42:01	2.19	md	0.18	28.86770888	Iredell
2021-08-23 5:26:11	1.77	md	0.16	28.89030304	Iredell
2020-08-12 0:20:01	2.15	md	1.74	29.04966036	Iredell
2020-08-10 8:43:06	2.15	md	0.03	29.10087027	Iredell
2020-08-08 20:42:28	1.83	md	1.12	29.17514832	Iredell
2020-08-17 1:58:23	1.62	md	1.1	29.30453054	Iredell
2020-08-09 12:07:37	5.1	mw	4.14	29.31041199	Iredell
2020-08-10 21:33:38	1.89	md	2.68	29.37585081	Iredell
2020-08-09 6:06:55	2.17	md	6.33	29.38435095	Iredell
2020-08-11 20:45:27	2.87	md	3.14	29.45187754	Iredell
2020-08-10 11:10:03	2.21	md	0.04	29.48181789	Iredell
2020-08-31 7:05:23	1.78	md	2.24	29.56793302	Iredell
2020-09-23 3:01:45	2.19	md	2.07	29.59613943	Iredell
2021-04-28 23:19:33	1.94	md	0.08	29.60313344	Iredell
2020-08-09 5:57:15	2.62	md	4.08	29.6095431	Iredell
2020-08-15 7:41:27	2.13	md	2.06	29.72872753	Iredell
2020-10-13 2:53:52	1.97	md	6.82	29.78698377	Iredell
2020-08-08 12:35:22	1.83	md	5.86	29.82751354	Iredell
2020-11-09 2:59:47	1.62	md	2.85	29.83205223	Iredell
2020-08-11 10:50:17	2.22	md	2.74	29.86703516	Iredell
2020-08-20 20:28:26	1.54	md	1.41	30.03788526	Iredell
2020-10-13 9:14:42	1.78	md	7.7	30.14823022	Iredell
2021-02-04 4:33:59	2.17	md	0.77	30.20630623	Iredell
2020-08-22 23:57:09	2.09	md	1.81	30.23933869	Iredell
2021-04-20 11:53:05	1.74	md	0.31	30.26640429	Iredell
2020-08-09 15:58:34	1.72	md	6.55	30.33632295	Iredell
2020-08-08 11:05:39	2.08	md	9.26	30.44999847	Iredell
2021-06-09 11:56:55	1.88	md	4.46	30.46740559	Iredell
2020-08-26 6:51:37	1.89	md	2.79	30.52509043	Iredell
2022-03-11 2:07:08	1.94	md	1.5	30.56756393	Iredell
2020-10-31 19:38:59	1.73	md	0	31.02887988	Iredell
2023-01-28 9:09:44	1.77	md	3.8	31.0370271	Iredell
2020-08-27 7:11:24	2.42	md	2.78	31.04830382	Iredell

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2021-02-04 4:03:04	2.56	md	1.54	31.06236269	Iredell
2020-08-21 14:44:35	1.89	md	1.78	31.13857365	Iredell
2020-08-31 1:34:43	1.94	md	0.1	31.33216698	Iredell
2020-08-20 21:46:55	2.33	md	2.95	31.54414172	Iredell
2020-08-13 23:42:22	1.65	md	0.59	31.8240524	Iredell
2020-11-07 15:13:33	1.51	md	0.16	32.11070462	Iredell
2020-10-25 3:08:32	2.81	md	1.42	32.11744745	Iredell
2021-08-17 13:19:28	2.65	md	5.6	32.3760842	Iredell
2020-10-01 19:53:14	2.63	md	4.23	34.23625361	Iredell
2022-08-02 4:22:04	2.08	md	2.05	35.65132352	Iredell
2022-10-25 9:25:27	2.59	md	2.96	36.78485168	Iredell
2020-08-21 11:57:31	1.96	md	0.04	38.14205409	Iredell
2019-03-31 0:08:31	1.79	md	4.73	39.91375725	Iredell
2021-06-17 2:43:10	2.26	md	9.02	45.50865071	Iredell
2023-07-06 9:50:51	2.71	md	0.08	45.75918481	Iredell
2021-06-16 9:19:36	2	md	4.98	45.7799358	Iredell
2023-07-08 13:09:23	2.57	md	3.86	46.81224533	Iredell
2020-04-06 19:02:16	2.32	md	0.87	47.98153229	Iredell
2022-01-30 2:35:59	2.18	md	4.2	50.01400632	Iredell
2020-07-09 15:07:52	2.02	md	2.62	54.14829565	Iredell
2022-05-29 0:13:59	1.82	md	4.24	55.05420194	Iredell
2022-08-14 1:58:56	1.97	md	6.66	56.15513607	Iredell
2020-09-26 11:23:33	2.19	md	21.75	56.83506569	Iredell
2023-04-13 1:35:06	1.83	md	5.41	60.23332159	Iredell
2023-10-17 9:54:26	2.24	md	8.18	64.03021428	Iredell
2019-01-11 6:39:19	2.35	md	10.88	68.57270558	Iredell
2021-11-21 11:04:12	2.56	md	4.53	68.72855967	Iredell
2021-05-12 8:00:48	1.77	md	9.99	71.1107815	Iredell
2021-08-24 8:16:16	2.08	md	0.05	71.14241173	Iredell
2023-04-04 6:40:25	1.62	md	11.45	74.02053263	Iredell
2019-11-06 8:37:51	1.59	md	4.73	74.22810669	Iredell
2021-04-07 8:58:59	1.62	md	1.82	78.32096988	Iredell
2021-02-21 5:01:33	2.4	md	0.12	79.17147137	Iredell

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2021-02-12 8:27:31	2.79	md	2.92	79.50318902	Iredell
2021-10-28 10:30:48	1.73	md	0.04	80.39341307	Iredell
2021-10-28 10:28:31	1.84	md	1.81	80.51547565	Iredell
2022-06-28 8:12:42	2.08	md	8.5	80.77795764	Iredell
2021-10-25 16:41:41	2.16	md	3.8	81.29407055	Iredell
2023-11-29 22:18:11	2.01	md	1.8	81.40508483	Iredell
2021-10-28 22:21:42	2.07	md	4.16	81.73486588	Iredell
2023-11-26 7:21:20	2.17	md	4.04	81.77315227	Iredell
2021-10-31 8:23:19	2.26	md	0.05	81.77588761	Iredell
2023-11-29 6:34:37	1.96	md	4.55	81.7917369	Iredell
2023-11-17 23:26:59	1.83	md	3.4	81.82287772	Iredell
2023-11-28	1.86	md	5.67	81.96862072	Iredell
2023-11-30 23:24:19	2.41	md	2.87	82.07425814	Iredell
2022-06-25 5:16:08	1.93	md	2.24	82.19246678	Iredell
2022-06-25 5:16:45	1.76	md	1.25	82.31456126	Iredell
2021-10-26 9:50:41	1.77	md	0.03	82.35416177	Iredell
2023-11-26 21:16:43	2.09	md	6.34	82.77731166	Iredell
2021-11-01 14:59:09	2	md	5.13	82.84753115	Iredell
2019-01-24 9:03:29	2.51	md	4.4	83.26091225	Iredell
2020-03-16 7:41:40	2.2	md	5.81	83.73902147	Iredell
2020-05-02 2:43:14	2.02	md	1.79	83.80412347	Iredell
2023-11-21 10:56:55	1.64	md	5.38	83.93951614	Iredell
2023-12-29 4:00:54	1.82	md	1.57	83.99615238	Iredell
2021-12-05 12:51:46	2.25	md	0.09	84.14579984	Iredell
2022-12-08 3:23:21	2.69	md	1.53	84.41109896	Iredell
2021-03-08 0:12:56	1.6	md	10.15	84.59448985	Iredell
2022-04-23 2:02:46	2.17	md	2.31	85.20580512	Iredell
2020-05-05 2:11:18	2.13	md	10.51	85.878489	Iredell
2020-05-05 2:52:35	1.85	md	10.2	85.89123962	Iredell
2020-04-30 5:00:57	2.34	md	9.42	86.23217718	Iredell
2019-08-18 16:23:21	2.51	md	4.69	86.3290055	Iredell
2020-05-04 1:00:48	2.26	md	8.56	86.41943261	Iredell
2023-12-13 5:15:26	1.6	md	6.41	86.43043657	Iredell

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2023-11-19 11:45:55	1.69	md	11.61	88.28635504	Iredell
2019-03-11 2:27:32	2.25	md	1.21	91.63851012	Iredell
2020-06-21 12:30:29	2.47	md	6.12	93.49623351	Iredell
2023-04-05 8:27:08	2.08	md	5.48	96.4850704	Iredell
2021-09-25 8:29:25	2.48	md	5.88	98.21206675	Iredell
2019-03-21 0:53:40	2.02	md	0.08	98.31439474	Iredell
2023-06-16 4:52:13	2.05	md	0.16	98.87745777	Iredell
2019-01-07 5:27:11	2.16	md	0.08	98.97985454	Iredell
2023-05-25 22:27:55	2.41	md	0.09	99.04866143	Iredell
2023-05-25 22:16:18	2.15	md	0.13	99.4285285	Iredell
2023-05-23 23:28:54	2.76	md	1.28	99.52873178	Iredell
2023-06-04 20:35:51	2.23	md	2.19	99.58907084	Iredell
2023-05-26 3:19:09	1.82	md	1.56	99.58953443	Iredell
2023-06-06 4:08:03	2.47	md	0.07	99.67056503	Iredell
2019-05-13 9:17:22	1.7	md	12.77	0	Rowan
2019-05-13 9:24:00	2.05	md	0.81	0	Rowan
2019-05-13 9:25:35	1.77	md	4.39	0	Rowan
2021-07-27 5:02:08	2.13	md	4.82	2.223745328	Rowan
2019-09-14 0:25:50	2.37	md	1.15	13.67730714	Rowan
2021-11-24 9:14:52	1.99	md	1.97	21.43927769	Rowan
2021-11-24 9:05:32	2.33	md	1.25	22.26780294	Rowan
2021-11-27 12:55:46	1.88	md	1.98	22.57888204	Rowan
2021-11-21 13:58:57	2.41	md	2.04	22.65146287	Rowan
2022-08-08 0:24:05	1.97	md	6.16	27.43316545	Rowan
2019-10-06 8:30:10	1.83	md	5.54	28.55277109	Rowan
2019-03-26 4:32:30	2.5	md	4.39	29.41373931	Rowan
2019-04-29 7:23:59	2.25	md	1.96	29.44086458	Rowan
2020-03-26 3:38:50	1.82	md	2.01	32.26786048	Rowan
2020-01-28 6:29:35	2.33	md	6.08	38.99591006	Rowan
2019-09-13 2:48:27	2.02	md	6.81	39.71579557	Rowan
2022-02-02 1:01:27	1.77	md	2.49	40.26080268	Rowan
2023-08-15 6:19:12	2.25	md	0.12	43.78091817	Rowan
2023-08-15 6:22:02	2.21	md	0.21	44.04049915	Rowan

Date	Magnitude	Magnitude Type	Depth	Miles from Planning Area	Nearest County
2023-02-18 0:42:27	2.41	md	2.35	56.20925708	Rowan
2020-01-15 9:52:30	2.27	md	8.7	67.59327723	Rowan
2023-10-19 15:49:27	2.24	md	5.39	68.53464263	Rowan
2020-07-25 9:55:12	2.22	md	2.87	74.21334625	Rowan
2022-03-11 15:03:18	2.09	md	0.64	88.87942965	Rowan

Table D- 67: Earthquakes within 50 miles of the planning area[2]

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
8/9/2020	5.1	mw	4 km SE of Sparta, North Carolina	176839.6	33.49	Love Valley
8/31/1861	5	mfa	Near Wilkesboro, North Carolina	49008.73	9.28	Love Valley
8/6/1885	3.5	mint	Near Boone, North Carolina	193052.8	36.56	Love Valley
12/13/1879	3.3	mint	Near Charlotte, North Carolina	116899.8	22.14	Mooresville
6/5/1998	3.2	mb_lg	4 km SSE of Mooresville, North Carolina	0	0.00	Mooresville
10/22/1984	3.1	mb_lg	15 km N of Boone, North Carolina	241525.2	45.74	Love Valley
12/15/2014	3	md	13 km NNW of Cedar Rock, North Carolina	155404.4	29.43	Love Valley
6/3/1981	3	mblg	2 km ESE of Boone, North Carolina	207680	39.33	Love Valley
8/25/2013	2.9	md	3 km NNE of Blowing Rock, North Carolina	206219.7	39.06	Love Valley
3/22/1978	2.9		4 km ESE of Valle Crucis, North Carolina	229047	43.38	Love Valley
8/11/2020	2.87	md	3 km SSE of Sparta, North Carolina	177147.7	33.55	Love Valley
10/25/2020	2.81	md	3 km ENE of Sparta, North Carolina	191886.3	36.34	Love Valley

[2] Latest Earthquakes. (2022). [Dataset]. In U.S. Geological Survey, USGS.gov (1.3.1). USGS. https://www.usgs.gov/tools/latest-earthquakes

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
4/22/1980	2.8	mb_lg	9 km SE of Dobson, North Carolina	141666.4	26.83	Harmony
3/4/1981	2.8	mb_lg	6 km E of Randleman, North Carolina	196234.6	37.17	Spencer
7/12/1993	2.7	mb_lg	5 km SW of Greensboro, North Carolina	203911.6	38.62	Spencer
10/18/1986	2.7	md	6 km SE of York, South Carolina	227925.7	43.17	Mooresville
6/10/2018	2.68	md	2 km NE of Hays, North Carolina	103794.7	19.66	Love Valley
8/17/2021	2.65	md	6 km N of Morganton, North Carolina	211872.4	40.13	Love Valley
10/1/2020	2.63	md	16 km W of Sparta, North Carolina	201707.4	38.20	Love Valley
8/9/2020	2.62	md	4 km SE of Sparta, North Carolina	178389.6	33.79	Love Valley
10/17/2006	2.6	mlg	7 km S of Winston-Salem, North Carolina	122248.3	23.15	Spencer
11/15/2015	2.58	md	10 km S of Denton, North Carolina	87165.93	16.51	Rockwell
2/4/2021	2.56	md	1 km SSW of Sparta, North Carolina	185313.7	35.10	Love Valley
10/3/1986	2.5	md	7 km W of Tyro, North Carolina	21166.05	4.01	Salisbury
11/3/2006	2.5	mblg	6 km S of Winston-Salem, North Carolina	122711.9	23.24	Spencer
3/26/2019	2.5	md	8 km E of Archdale, North Carolina	170996.4	32.39	Spencer
6/12/2014	2.5	md	4 km NE of Blowing Rock, North Carolina	202010.4	38.26	Love Valley
8/27/2020	2.42	md	1 km ESE of Sparta, North Carolina	185796.2	35.19	Love Valley
11/21/2021	2.41	md	5 km SSW of Winston-Salem, North Carolina	125802.8	23.83	Salisbury
10/18/2006	2.4	mlg	5 km SSW of Winston-Salem, North Carolina	125002.6	23.67	Salisbury
10/13/2020	2.4	md	9 km SW of Sparta, North Carolina	172155	32.61	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
8/24/2014	2.4	md	4 km NE of Blowing Rock, North Carolina	200045.9	37.89	Love Valley
9/14/2019	2.37	md	6 km E of Advance, North Carolina	77983.44	14.77	Salisbury
8/12/2018	2.37	md	14 km NNW of Cedar Rock, North Carolina	156562.6	29.65	Love Valley
7/24/2016	2.35	md	6 km SW of Millers Creek, North Carolina	104536.8	19.80	Love Valley
12/23/2018	2.35	md	7 km WSW of Newton, North Carolina	105166.2	19.92	Statesville
11/24/2021	2.33	md	6 km SW of Winston-Salem, North Carolina	124237.9	23.53	Salisbury
8/20/2020	2.33	md	1 km E of Sparta, North Carolina	188426.2	35.69	Love Valley
1/28/2020	2.33	md	4 km NW of Forest Oaks, North Carolina	221243.3	41.90	Spencer
6/18/2024	2.32	md	2 km E of Sparta, North Carolina	188023.6	35.61	Love Valley
4/21/2021	2.3	md	6 km SE of Sparta, North Carolina	172170.2	32.61	Love Valley
8/8/2020	2.3	md	5 km SE of Sparta, North Carolina	173524.8	32.86	Love Valley
5/3/2014	2.3	md	Virginia-North Carolina border region	199698.9	37.82	Love Valley
3/30/2024	2.29	md	8 km W of Lowgap, North Carolina	189633.9	35.92	Love Valley
2/22/2015	2.26	md	5 km SW of Newton, North Carolina	97711.97	18.51	Troutman
8/9/2020	2.26	md	5 km SSE of Sparta, North Carolina	172392.4	32.65	Love Valley
6/18/2024	2.26	md	5 km SE of Sparta, North Carolina	172688.2	32.71	Love Valley
4/29/2019	2.25	md	6 km W of Kernersville, North Carolina	161835.2	30.65	Spencer
8/15/2023	2.25	md	4 km WSW of McLeansville, North Carolina	245379.5	46.47	Spencer

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
7/21/2024	2.22	md	13 km NNW of Cedar Rock, North Carolina	156491.5	29.64	Love Valley
8/28/2024	2.22	md	7 km SSE of Sparta, North Carolina	168226.6	31.86	Love Valley
7/13/2024	2.22	md	6 km SSE of Sparta, North Carolina	168975.5	32.00	Love Valley
8/11/2020	2.22	md	3 km SSE of Sparta, North Carolina	179418.5	33.98	Love Valley
8/10/2020	2.21	md	7 km ESE of Sparta, North Carolina	178020.8	33.72	Love Valley
8/15/2023	2.21	md	3 km WSW of McLeansville, North Carolina	246865	46.75	Spencer
3/31/2012	2.2	md	9 km WSW of Burnsville, North Carolina	167712.4	31.76	Rockwell
6/17/1986	2.2	md	11 km NNE of Pageland, South Carolina	247253.5	46.83	Rockwell
5/6/2024	2.19	md	9 km SE of Belmont, North Carolina	120337.8	22.79	Mooresville
2/25/2021	2.19	md	4 km SSE of Sparta, North Carolina	174142.1	32.98	Love Valley
9/23/2020	2.19	md	4 km SE of Sparta, North Carolina	178413.8	33.79	Love Valley
6/11/2024	2.19	md	3 km NNW of Lesslie, South Carolina	219055.7	41.49	Mooresville
8/9/2020	2.17	md	4 km SSE of Sparta, North Carolina	177043.8	33.53	Love Valley
2/4/2021	2.17	md	2 km S of Sparta, North Carolina	180812.3	34.24	Love Valley
5/11/2022	2.15	md	3 km ESE of Catawba, North Carolina	32365.11	6.13	Statesville
8/12/2020	2.15	md	5 km S of Sparta, North Carolina	172187.6	32.61	Love Valley
8/12/2020	2.15	md	4 km SSE of Sparta, North Carolina	174942.9	33.13	Love Valley
8/10/2020	2.15	md	5 km SE of Sparta, North Carolina	175942.9	33.32	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
7/27/2021	2.13	md	3 km NNE of Cooleemee, North Carolina	41188.8	7.80	Salisbury
8/15/2020	2.13	md	3 km SSE of Sparta, North Carolina	178601	33.83	Love Valley
5/12/2023	2.12	md	1 km NNW of Pineville, North Carolina	155216.1	29.40	Mooresville
1/27/1987	2.1	md	6 km WNW of Tyro, North Carolina	27657.92	5.24	Salisbury
1/18/1992	2.1	md	6 km W of High Point, North Carolina	124597.1	23.60	Spencer
12/15/2014	2.1	md	13 km NNW of Cedar Rock, North Carolina	149737.1	28.36	Love Valley
12/6/2016	2.09	md	14 km NNW of Cedar Rock, North Carolina	156126.6	29.57	Love Valley
8/22/2020	2.09	md	2 km SSE of Sparta, North Carolina	181406.5	34.36	Love Valley
6/19/2024	2.09	md	1 km ESE of Sparta, North Carolina	187786.8	35.57	Love Valley
10/6/2019	2.08	md	12 km NNW of Cedar Rock, North Carolina	156460	29.63	Love Valley
8/8/2020	2.08	md	4 km ESE of Sparta, North Carolina	183130.8	34.68	Love Valley
8/2/2022	2.08	md	5 km NNE of Blowing Rock, North Carolina	202426.5	38.34	Love Valley
3/13/2022	2.06	md	6 km SSE of Sparta, North Carolina	171374.9	32.46	Love Valley
5/13/2019	2.05	md	5 km SSW of Cooleemee, North Carolina	22125.68	4.19	Salisbury
9/20/2020	2.05	md	3 km WSW of Millers Creek, North Carolina	106035.9	20.08	Love Valley
8/28/2024	2.03	md	8 km S of Sparta, North Carolina	161146.3	30.52	Love Valley
9/13/2019	2.02	md	3 km ESE of Greensboro, North Carolina	224039	42.43	Spencer
11/5/2021	2.01	md	8 km SSE of Sparta, North Carolina	161485.6	30.58	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
11/27/1983	2	md	3 km NNE of Hays, North Carolina	107882.2	20.43	Love Valley
3/4/2021	2	md	5 km SSE of Sparta, North Carolina	171228.3	32.43	Love Valley
3/9/1990	2	md	10 km W of Gamewell, North Carolina	212898.3	40.32	Love Valley
5/18/2022	1.99	md	3 km ESE of Catawba, North Carolina	32745.92	6.20	Statesville
11/24/2021	1.99	md	7 km SSW of Winston-Salem, North Carolina	119633.3	22.66	Salisbury
6/11/2018	1.98	md	1 km WSW of Hays, North Carolina	99678.21	18.88	Love Valley
8/8/2022	1.97	md	6 km E of Archdale, North Carolina	160605.4	30.42	Spencer
8/10/2020	1.97	md	5 km S of Sparta, North Carolina	171752.6	32.53	Love Valley
10/13/2020	1.97	md	8 km SW of Sparta, North Carolina	178055.7	33.72	Love Valley
4/17/2021	1.96	md	5 km W of Statesville, North Carolina	2776.142	0.53	Statesville
8/9/2020	1.96	md	6 km SSE of Sparta, North Carolina	169750.8	32.15	Love Valley
8/21/2020	1.96	md	5 km NNE of Lesslie, South Carolina	212763	40.30	Mooresville
3/15/2020	1.94	md	9 km NNW of Millers Creek, North Carolina	129674.8	24.56	Love Valley
4/28/2021	1.94	md	5 km ESE of Sparta, North Carolina	178662	33.84	Love Valley
3/11/2022	1.94	md	2 km S of Sparta, North Carolina	182930.4	34.65	Love Valley
8/31/2020	1.94	md	9 km ESE of Lowgap, North Carolina	194462.2	36.83	Love Valley
8/10/2020	1.89	md	4 km SSE of Sparta, North Carolina	176889.6	33.50	Love Valley
8/26/2020	1.89	md	2 km SSE of Sparta, North Carolina	182893.6	34.64	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
8/21/2020	1.89	md	1 km SE of Sparta, North Carolina	186211.6	35.27	Love Valley
10/4/2018	1.88	md	5 km ESE of Cedar Rock, North Carolina	118414.9	22.43	Love Valley
11/27/2021	1.88	md	5 km SW of Winston-Salem, North Carolina	125795.1	23.82	Salisbury
6/9/2021	1.88	md	3 km ESE of Sparta, North Carolina	183112.8	34.68	Love Valley
11/15/2017	1.84	md	7 km WSW of Newton, North Carolina	107373	20.34	Statesville
10/6/2019	1.83	md	4 km ESE of Hemby Bridge, North Carolina	159301.3	30.17	Landis
8/8/2020	1.83	md	4 km SSW of Sparta, North Carolina	175137	33.17	Love Valley
8/8/2020	1.83	md	3 km S of Sparta, North Carolina	179018.3	33.90	Love Valley
3/26/2020	1.82	md	2 km NNW of Kernersville, North Carolina	177909.8	33.70	Spencer
6/21/2021	1.81	md	10 km NNW of Hays, North Carolina	135018.9	25.57	Love Valley
8/16/2022	1.8	md	3 km SE of Troutman, North Carolina	289.5535	0.05	Troutman
8/14/1999	1.8	md	17 km SW of Sparta, North Carolina	162709.3	30.82	Love Valley
8/9/2020	1.8	md	8 km S of Sparta, North Carolina	163085.8	30.89	Love Valley
2/9/2021	1.79	md	6 km SE of Sparta, North Carolina	171395.2	32.46	Love Valley
8/31/2020	1.78	md	3 km S of Sparta, North Carolina	177566.7	33.63	Love Valley
10/13/2020	1.78	md	6 km SW of Sparta, North Carolina	179873	34.07	Love Valley
5/13/2019	1.77	md	2 km S of Cooleemee, North Carolina	28112.43	5.32	Salisbury
5/30/2022	1.77	md	North Carolina	47107.61	8.92	Statesville
8/23/2021	1.77	md	4 km SSE of Sparta, North Carolina	174245.5	33.00	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
1/28/2023	1.77	md	9 km SSE of West Jefferson, North Carolina	182834.7	34.63	Love Valley
2/2/2022	1.77	md	4 km ESE of Lilesville, North Carolina	253732.2	48.06	Rockwell
6/12/2018	1.76	md	North Carolina	102548.7	19.42	Statesville
4/20/2021	1.74	md	2 km SE of Sparta, North Carolina	181628.3	34.40	Love Valley
10/31/2020	1.73	md	Virginia-North Carolina border region	186092.3	35.24	Love Valley
8/20/2017	1.72	md	6 km NNE of Mount Holly, North Carolina	70660.57	13.38	Mooresville
8/9/2020	1.72	md	Virginia-North Carolina border region	181006.8	34.28	Love Valley
9/25/2024	1.71	md	5 km W of Jaars, North Carolina	238005.6	45.08	Mooresville
5/13/2019	1.7	md	4 km S of Cooleemee, North Carolina	23923.85	4.53	Salisbury
11/17/2001	1.7	md	8 km E of Lansing, North Carolina	226259.7	42.85	Love Valley
10/13/2019	1.69	md	6 km ESE of Mountain View, North Carolina	107900	20.44	Statesville
6/13/2018	1.69	md	6 km ESE of Mountain View, North Carolina	109412.5	20.72	Statesville
11/24/2021	1.66	md	7 km E of Lewisville, North Carolina	131728.1	24.95	Salisbury
7/30/2021	1.65	md	7 km SSE of Sparta, North Carolina	168399.8	31.89	Love Valley
8/13/2020	1.65	md	4 km ENE of Sparta, North Carolina	190388.6	36.06	Love Valley
2/26/2021	1.63	md	2 km N of Catawba, North Carolina	34491.42	6.53	Statesville
10/21/2018	1.62	md	3 km SSE of Brookford, North Carolina	111952.9	21.20	Statesville
6/21/2021	1.62	md	10 km NNW of Hays, North Carolina	134377.5	25.45	Love Valley
8/17/2020	1.62	md	4 km SE of Sparta, North Carolina	176762.6	33.48	Love Valley

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
11/9/2020	1.62	md	4 km ESE of Sparta, North Carolina	179864.2	34.07	Love Valley
12/4/1983	1.6	md	13 km SE of Denton, North Carolina	118410.4	22.43	Rockwell
11/14/2017	1.54	md	5 km SE of Brookford, North Carolina	107073.7	20.28	Statesville
8/20/2020	1.54	md	3 km SE of Sparta, North Carolina	180481.2	34.18	Love Valley
2/27/2021	1.53	md	Virginia-North Carolina border region	171560.9	32.49	Love Valley
11/7/2020	1.51	md	2 km ENE of Sparta, North Carolina	191612.8	36.29	Love Valley
2/19/2018	1.5	md	3 km SSE of Brookford, North Carolina	111990.3	21.21	Statesville
10/17/2006	1.5	mlg	5 km WSW of Winston-Salem, North Carolina	132450.8	25.09	Salisbury
3/31/2024	1.5	ml	8 km W of Lowgap, North Carolina	191272.4	36.23	Love Valley
11/25/2021	1.49	md	6 km SE of East Bend, North Carolina	115902.7	21.95	Harmony
10/25/2020	1.48	md	3 km E of Sparta, North Carolina	186633.2	35.35	Love Valley
8/23/2021	1.46	md	3 km SSE of Sparta, North Carolina	179076.3	33.92	Love Valley
4/2/1978	1.4	md	2 km SE of Maiden, North Carolina	80510.96	15.25	Mooresville
8/12/2020	1.4	md	4 km SSE of Sparta, North Carolina	175635.9	33.26	Love Valley
10/13/2020	1.38	md	7 km SW of Sparta, North Carolina	180242.6	34.14	Love Valley
8/30/2020	1.33	md	3 km SE of Sparta, North Carolina	179599.6	34.02	Love Valley
11/10/2020	1.32	md	4 km SE of Sparta, North Carolina	178929.5	33.89	Love Valley
10/18/2006	1.3	md	5 km W of Winston-Salem, North Carolina	137807.7	26.10	Salisbury

Date	Magnitude	Magnitude Type	place	Feet Distance	Miles Distance from Nearest Municipality	Municipality
11/22/2020	1.3	ml	4 km SE of Sparta, North Carolina	179787	34.05	Love Valley
2/22/1990	1.3	md	10 km SW of West Jefferson, North Carolina	217138.2	41.12	Love Valley
10/13/2020	1.27	md	7 km SW of Sparta, North Carolina	178253	33.76	Love Valley
11/6/2020	1.27	md	1 km E of Sparta, North Carolina	188309.7	35.66	Love Valley
1/10/2023	1.24	md	6 km SE of Mountain View, North Carolina	109826.4	20.80	Statesville
8/23/2020	1.24	md	2 km ESE of Sparta, North Carolina	186852.6	35.39	Love Valley
10/31/2020	1.22	md	3 km ENE of Sparta, North Carolina	190601.9	36.10	Love Valley
11/5/2020	1.18	md	3 km ENE of Sparta, North Carolina	192378.8	36.44	Love Valley
11/9/2020	1.15	md	4 km ESE of Sparta, North Carolina	179525	34.00	Love Valley
10/31/2020	1.14	md	4 km E of Sparta, North Carolina	189772.4	35.94	Love Valley
8/31/1989	1.1	md	5 km N of Spencer, North Carolina	7413.5	1.40	Spencer
10/28/2020	1.03	md	0 km SSW of Sparta, North Carolina	187898.9	35.59	Love Valley
8/24/2020	1.02	md	1 km NW of Sparta, North Carolina	195487.3	37.02	Love Valley
10/8/1989	1	md	15 km N of Mulberry, North Carolina	152048.8	28.80	Love Valley

Appendix E: NFIP Information

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
Iredell County	Iredell County has adopted a Flood Damage Prevention Ordinance in their Land Development Code which was adopted on September 18, 2018.	The Flood Damage Prevention Ordinance establishes the provisions that apply to SFHAs which requires that all development in the SFHAs adhere to all requirements according to the Flood Damage Prevention Ordinance. Development located fully in or partially in the SFHA is required to meet new construction and substantial improvement requirements. Any development in the Special Flood Hazard Areas must obtain a floodplain development permit before any construction or substantial improvement in the SFHAs to ensure that proposed development is reviewed for flood risks and comply with floodplain	The Planning Department has designated the Floodplain Administrator. All development in the SFHAs is required to obtain floodplain development permits which are reviewed by the designated floodplain manager. The floodplain manager also conducts education and outreach, reviews development plans, inspects construction for compliance with floodplain management standards, enforce substantial damage and improvement provisions in the floodplain management standards, and issue penalties for violations including fines or other penalties. The floodplain manager uses multiple resources to determine substantial damage and/or improvement. This includes	The Flood Damage Prevention Ordinance defines substantial improvement and substantial damage, and it requires that all substantial improvements adhere to all flood hazard reduction regulations and development regulations for flood damage prevention. The floodplain manager uses multiple resources to determine substantial damage and/or improvement. Substantial Damage means damage of any origin sustained by a structure during any 1-year period whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred. Substantial Improvement means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any 1-year period for which the cost

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		management regulations. Each application is reviewed by the floodplain administrator to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation. This includes ensuring development adheres to all applicable flood damage prevention regulations. Floodplain managers conduct inspections during construction and after construction is complete to ensure that SFHAs meet floodplain management regulations, focusing on elevation, floodproofing, and other minimum flood damage reduction requirements, including all substantial damage or substantial improvement	in-house consulting with Building Officials, research of public market value and supply estimates and independent professional assessments provided by the property owner for the floodplain manager to make a final determination.	equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. • Does not include correction of existing violations of state or community health, sanitary, or safety code specifications that have been identified by community code enforcement officials and are necessary to assure safe living conditions. • Does not include alterations of historic structures, provided that the alteration will not preclude the structures continued designation as a historic structure and the alteration is approved by variance specified in the ordinance.This includes in-house consulting with Building Officials, research of public market value and supply estimates and independent professional assessments provided by the property owner for the floodplain manager to make a final determination. The community communicates substantial damage

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		regulations where applicable. Floodplain management issues fines, issue letters for non-compliant structures in the SFHAs, and monitors compliance to take corrective actions when necessary.		and substantial improvement damage assessments after flooding events or upon notification of a damaged structure in the SFHA. The improvement assessments are conducted during the building permit application process. If building permits were not pulled for the improvement, the assessment is typically done upon notification or during a damage assessment. Once an assessment is complete, it is officially delivered in written form to the property owners via US Mail. If available, communication with the property owner will also take place in-person, by phone, or by email.
Harmony	*Not a NFIP Community*			
Love Valley	*Not a NFIP Community*			
Mooresville	The Town of Mooresville has included a Flood Damage Prevention Provision in their Unified Development Ordinance	Before any development in Special Flood Hazard Areas, a floodplain development permit is required, and development must meet the standards outlined by the Flood	The Planning Director of the Town of Mooresville is designate as the Floodplain Administrator and the administrator of the UDO.	All substantial damage and substantial improvements must adhere to provisions of the Flood Damage Prevention section of the UDO and the standards identified for Flood Hazard Reduction.

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		Damage Prevention section of the UDO.		
Statesville	Floodplain Development Permit Process is outlined in the Unified Development Code for Statesville	All development within Special Flood Hazard Areas is required to obtain a Floodplain Development Permit and adhere to all the specified Floodplain Development Requirements for flood damage prevention.	The Stormwater Program Manager is the designated administrator of Floodplain Development Permits and is responsible for regulating and reviewing all Floodplain Development permits to ensure compliance.	All construction in the SFHAs and substantial damage and improvement are required to adhere to requirements established for Special Flood Hazard Area development. The City of Statesville receives training from NC DPS for the floodplain manager to make substantial damage and substantial improvement determinations. The City of Statesville communicates regarding substantial damage and substantial improvement violations and details through letters, Facebook posts, the City website, and site visits.
Troutman	The Troutman Unified Development Code outlines the Floodplain Development Permitting Process which requires permits to be obtained for any development in the SFHAs.	The UDO for Troutman requires any development, including substantial damage/improvement, to obtain a floodplain development permit when located within a SFHA.	The Planning Director, or his/her designee, is the Floodplain Administrator for Troutman and is responsible for administering and implementing provisions of the flood development permit ordinance.	Substantial Improvements/Damages are defined by the Floodplain Development Permit Ordinance and requires that any development that falls in the category to obtain a floodplain development permit.

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Rowan County	Rowan County has a Flood Damage Prevention Ordinance that was originally adopted on May 4, 2009, and has been updated as of 6/21/2021.	The Flood Damage Prevention Ordinance applies to all land within Rowan County that fall within a SFHA to obtain a floodplain development permit and conform to the provisions outlined for development activities within SFHAs. All proposed development in the Special Flood Hazard Areas must obtain a floodplain development permit before any construction or substantial improvement in the SFHAs to ensure that proposed development is reviewed for flood risks and comply with floodplain management regulations. Each application is reviewed by the floodplain administrator to ensure that construction is compliant with elevation requirements, flood damage prevention	The Director of Planning and Development is designated as the Floodplain Administrator for Rowan County. The Rowan County Flood Damage Prevention Ordinance is administered by the Planning & Development Department. All development in the SFHAs is required to obtain floodplain development permits which are reviewed by the designated floodplain manager. The floodplain manager also reviews development plans, inspects construction for compliance with floodplain management standards, enforce substantial damage and improvement provisions in the floodplain management standards, and issue penalties for violations including fines or other penalties.	The Flood Damage Prevention Ordinance defines substantial damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the Flood Damage Prevention Ordinance. If a property in the SFHA is damaged for any reason and the cost to repair it is more than 50% of the overall market value of the property before the damage, the property is considered substantially damaged. If a property undergoes renovations or repairs over a period of ten years that costs more than 50% of the overall market value of the property, it is considered a substantial improvement. Substantial improvement and substantial damage properties in SFHAs must adhere to current floodplain management standards addressed in the floodplain regulations. Based on our records, no structure has experienced substantial damage or been

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		standards, and all new structures are elevated above the Base flood elevation. This includes ensuring development adheres to all applicable flood damage prevention regulations. Floodplain managers conduct inspections during construction and after construction is complete to ensure that SFHAs meet floodplain management regulations, focusing on elevation, floodproofing, and other minimum flood damage reduction requirements, including all substantial damage or substantial improvement regulations where applicable. Floodplain managers issue fines, issue letters for non-compliant structures in the SFHAs, and monitors compliance to take		approved for a substantial improvement. Substantial Damage means damage of any origin sustained by a structure during any 1-year period whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50% of the market value of the structure before the damage occurred. Substantial Improvement means any combination of repairs, reconstruction, rehabilitation, addition, or other improvement of a structure, taking place during any 1-year period for which the cost equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. · Does not include correction of existing violations of state or community health, sanitary, or safety code specifications that have been identified by community code enforcement officials and are necessary to assure safe living conditions.

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		corrective actions when necessary.		· Does not include alterations of historic structures, provided that the alteration will not preclude the structures continued designation as a historic structure and the alteration is approved by variance specified in the ordinance. Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. But the community has not experienced such an event to date. The public does have online access via the Planning & Development Department webpage to view both the Flood Damage Prevention Ordinance and NC Floodplain Management Quick Guide, which

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
				provide information regarding SD / SI requirements.
China Grove	Flood Damage Prevention standards were adopted as part of the China Grove UDO.	All development in the Special Flood Hazard Areas must obtain a floodplain development permit before any construction or substantial improvement in the SFHAs to ensure that proposed development is reviewed for flood risks and comply with floodplain management regulations. Based on an interlocal agreement to administer the flood damage prevention standards of the China Grove Unified Development Ordinance (UDO), each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention	The flood damage prevention standards of the China Grove UDO are administered by the Rowan County Planning and Development Department through an interlocal agreement. All development in the SFHAs is required to obtain floodplain development permits which are reviewed by the floodplain manager or his / her designee. The floodplain manager also, reviews development plans, inspects construction for compliance with floodplain management standards, enforce substantial damage and improvement provisions in the floodplain management standards, and issue penalties for violations including fines or other penalties.	The UDO defines substantial damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the Flood Damage Prevention Ordinance. . Rowan County Planning & Development Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. The public has online access via The Town of China Grove's website to view the Flood Damage

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		standards, and all new structures are elevated above the Base flood elevation. This includes ensuring development adheres to all applicable flood damage prevention regulations. Floodplain managers conduct inspections during construction and after construction is complete to ensure that SFHAs meet floodplain management regulations, focusing on elevation, floodproofing, and other minimum flood damage reduction requirements, including all substantial damage or substantial improvement regulations where applicable. Floodplain managers issue fines, issue letters for non-compliant structures in the SFHAs, and monitors compliance to take		Prevention Ordinance and Rowan County Planning & Development Department webpage to view the NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements.

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		corrective actions when necessary.		
Cleveland	Flood Damage Prevention standards were adopted as part of the Flood Damage Prevention Ordinance.	Prior to any development within the SHFA, a floodplain development permit is required to ensure compliance with the Flood Damage Prevention Ordinance. Based on an interlocal agreement to administer Cleveland's Flood Damage Prevention Ordinance, each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation. This includes ensuring development adheres to all applicable	The Zoning Administrator or his / her designee is appointed as the Floodplain Administrator to administer and implement the Flood Damage Prevention Ordinance. Cleveland's Flood Damage Prevention Ordinance is administered by the Rowan County Planning and Development Department through an interlocal agreement. All development in the SFHAs is required to obtain floodplain development permits which are reviewed by the floodplain manager or his / her designee. The floodplain manager also, reviews development plans, inspects construction for compliance with floodplain management standards, enforce substantial damage and improvement provisions in the	The Flood Damage Prevention Ordinance defines substantial damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the ordinance. Rowan County Planning & Development Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. Based on our records, no structure has experienced substantial damage or been approved for a

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		flood damage prevention regulations. Floodplain managers conduct inspections during construction and after construction is complete to ensure that SFHAs meet floodplain management regulations, focusing on elevation, floodproofing, and other minimum flood damage reduction requirements, including all substantial damage or substantial improvement regulations where applicable. Floodplain managers issue fines, issue letters for non-compliant structures in the SFHAs, and monitors compliance to take corrective actions when necessary.	floodplain management standards, and issue penalties for violations including fines or other penalties.	substantial improvement. The public does have online access via the Rowan County Planning & Development Department webpage to view NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements.
East Spencer	Flood Damage Prevention standards were adopted as part of the Flood Damage Prevention Ordinance.	Prior to any development within the SHFA, a floodplain development permit is required to	The Planning Director is appointed as the Floodplain Administrator to administer and implement the flood	The Flood Damage Prevention Ordinance defines substantial damage/improvement and requires that all development that meets the

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		ensure compliance with the Flood Damage Prevention Ordinance. Based on an interlocal agreement to administer East Spencer's Flood Damage Prevention Ordinance, each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation. This includes ensuring development adheres to all applicable flood damage prevention regulations. Floodplain managers conduct inspections during construction and after construction is complete to ensure that SFHAs meet	damage prevention portion of the Flood Damage Prevention Ordinance. East Spencer's Flood Damage Prevention Ordinance is administered by the Rowan County Planning and Development Department through an interlocal agreement. All development in the SFHAs is required to obtain floodplain development permits which are reviewed by the floodplain manager or his / her designee. The floodplain manager also, reviews development plans, inspects construction for compliance with floodplain management standards, enforce substantial damage and improvement provisions in the floodplain management standards, and issue penalties for violations including fines or other penalties.	criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the ordinance. Rowan County Planning & Development Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. Based on our records, no structure has experienced substantial damage or been approved for a substantial improvement. The public does have online access via The Town of East Spencer's website to view the Flood Damage Prevention Ordinance and Rowan County Planning & Development Department webpage to view the

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		floodplain management regulations, focusing on elevation, floodproofing, and other minimum flood damage reduction requirements, including all substantial damage or substantial improvement regulations where applicable. Floodplain managers issue fines, issue letters for non-compliant structures in the SFHAs, and monitors compliance to take corrective actions when necessary		NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements.
Faith	Flood Damage Prevention standards were adopted as part of the Flood Damage Prevention Ordinance.	Prior to any development within the SHFA, a floodplain development permit is required to ensure compliance with the Flood Damage Prevention Ordinance. Based on an interlocal agreement to administer Faith's Flood Damage Prevention Ordinance,	The Rowan County Director of Planning Director is appointed as the Floodplain Administrator to administer and implement the flood damage prevention portion of the Flood Damage Prevention Ordinance. Faith's Flood Damage Prevention Ordinance is administered by the Rowan County Planning	The Flood Damage Prevention Ordinance defines substantial damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the ordinance. Rowan County Planning & Development Department staff include four (4)

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
		each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation	and Development Department through an interlocal agreement.	Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. Based on our records, no structure has experienced substantial damage or been approved for a substantial improvement. The public does have online access via the Rowan County Planning & Development Department webpage to view NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements.
Granite Quarry	Granite Quarry has adopted a Flood Damage Prevention Ordinance on June 29, 2023.	Granite Quarry's Flood Damage Prevention Ordinance defines SFHAs and requires that all development or substantial	The Town of Granite Quarry has designated the Stormwater Administrator as the Floodplain Administrator and is responsible for	Granite Quarry's Flood Damage Prevention Ordinance defines substantial damage and substantial improvement and requires that all substantial damage/improvement

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		improvement follow the regulations of the ordinance which require Floodplain Development Permits.	ensuring all development in SFHAs and substantial damage/improvement adhere to the guidelines specified by the Flood Damage Prevention Ordinance.	adheres to the Flood Hazard Reduction standards.
Landis	The Town of Landis has implemented a Flood Damage Prevention Article of the Landis Development Ordinance which was adopted on December 12, 2022.	The Landis Flood Damage Prevention Article defines SFHAs and requires that all development in the SFHA obtain a floodplain development permit and adhere to the Flood Hazard Reduction standards outlined by the article.	The Town of Landis Stormwater Administrator is designated as the Floodplain Administrator. The Floodplain Administrator is responsible for ensuring that all development of substantial damage/improvement and development within the SFHAs adhere to the guidelines specified by the Flood Damage Prevention Ordinance.	The Town of Landis requires that all substantial damage or substantial improvement projects adhere to the guidelines in the Flood Damage Prevention Ordinance and obtain a floodplain development permit.
Rockwell	Flood Damage Prevention standards were adopted as part of the Flood Damage Prevention Ordinance.	Prior to any development within the SHFA, a floodplain development permit is required to ensure compliance with the Flood Damage Prevention Ordinance.	The Zoning Administrator or his / her designee is appointed as the Floodplain Administrator to administer and implement the Flood Damage Prevention Ordinance. Based on an interlocal agreement to	The Flood Damage Prevention Ordinance defines substantial damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined

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			administer Rockwell's Flood Damage Prevention Ordinance, each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation. Rockwell's Flood Damage Prevention Ordinance is administered by the Rowan County Planning and Development Department through an interlocal agreement.	by the ordinance. Rowan County Planning & Development Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. The public does have online access via the Rowan County Planning & Development Department webpage to view NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements. Based on our records, no structure has experienced substantial damage or been approved for a substantial improvement.
Spencer	Flood Damage Prevention standards were adopted as	Prior to any development within the SHFA, a	The Rowan County Director of Planning Director is	The Flood Damage Prevention Ordinance defines substantial

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
	part of the Flood Damage Prevention Ordinance.	floodplain development permit is required to ensure compliance with the Flood Damage Prevention Ordinance. Based on an interlocal agreement to administer Spencer's Flood Damage Prevention Ordinance, each application is reviewed by the Rowan County Planning & Development Department to ensure that construction is compliant with elevation requirements, flood damage prevention standards, and all new structures are elevated above the Base flood elevation.	appointed as the Floodplain Administrator to administer and implement the flood damage prevention portion of the Flood Damage Prevention Ordinance. Spencer's Flood Damage Prevention Ordinance is administered by the Rowan County Planning and Development Department through an interlocal agreement.	damage/improvement and requires that all development that meets the criteria to be considered a substantial damage/improvement to follow the permitting processes and adhere to the regulations outlined by the ordinance. Rowan County Planning & Development Department staff include four (4) Certified Floodplain Managers (CFM) who receive regular training for effective administration including SI / SD determinations. Staff members also participated in a Substantial Damage Administrative Procedures (SDAP) Program hosted by FEMA in June of 2022. Staff are aware of tools such as the Substantial Damage Estimator (SDE) available to assist staff in making necessary determinations. But, the community has not experienced a substantial damage or substantial improvement from a flooding event to date. The public does have online access via The Town of Spencer's website to view the Flood Damage Prevention Ordinance and Rowan County

Jurisdiction:	Adoption of NFIP minimum floodplain management criteria via local regulation.	Implementation and enforcement of local floodplain management regulations to regulate and permit development in SFHAs.	Appointment of a designee or agency to implement the addressed commitments and requirements of the NFIP.	Description of how participants implement the substantial improvement/substantial damage provisions of their floodplain management regulations after an event
				Planning & Development Department webpage to view the NC Floodplain Management Quick Guide, which provide information regarding SD / SI requirements.
Salisbury	The City of Salisbury has implemented a Flood Damage Prevention Ordinance as of June 16, 2009.	The Flood Damage Prevention Ordinance requires that all development within SFHAs obtain floodplain development permits and adhere to the specified development guidelines.	The City Engineer, or his or her designee, is the City of Salisbury's Floodplain Administrator.	The Flood Damage Prevention Ordinance outlines the requirements for substantial damage/improvement and requires that any substantial improvement development, defined by the ordinance, should adhere to the permitting process for development in Special Flood Hazard Areas.

Appendix F: Critical Facilities

Table F- 1: Schools in the planning area[1]

County	School Name	Address	City
Iredell	Academy of Excellence	612 South Race Street	Statesville
Iredell	Calvary Chapel Academy	112 Moose Club Road	Statesville
Iredell	Carolina Christian Bible College	319 S. Oak St	Statesville
Iredell	Cornerstone Christian Academy	650 Glover Street	Statesville
Iredell	Eagles Refuge Academy	109 Eagles Refuge Drive	Statesville
Iredell	Headwaters Christian Academy	2659 S Chipley Ford Rd	Statesville
Iredell	Hope Christian Academy	872 Fern Hill Rd.	Mooresville
Iredell	Liberty Preparatory Christian Acad.	229 Midway Lake Rd	Mooresville
Iredell	Primrose School of Lake Norman	173 Raceway Drive	Mooresville
Iredell	Redeemer Preparatory Academy	2200 East Broad Street	Statesville
Iredell	RS Prepartory Academy	691 N. Main St	Troutman
Iredell	Southview Christian School	625 Wallace Springs Road	Statesville
Iredell	Springs Academy	138 Barium Springs Rd.	Statesville
Iredell	Statesville Christian School	1210 Museum Road	Statesville
Iredell	Statesville Montessori School	1012 Harmony Drive	Statesville
Iredell	The WAVE Christian Academy	135 Village Point Dr.	Statesville
Iredell	Woodlawn School	135 Woodlawn School Loop	Mooresville
Rowan	Central Christian Academy	1810 Moose Rd	Kannapolis
Rowan	Essie Academy	507 W. Innes Street	Salisbury
Rowan	Nehemiah Enrichment Academy	118 Miller Chapel Road	Salisbury
Rowan	North Hills Christian School	2970 W. Innes Street	Salisbury
Rowan	North Kannapolis Christian Acad	312 Locust Street	Kannapolis
Rowan	Rockwell Christian School	401 Depot Street	Rockwell
Rowan	Sacred Heart Catholic School	385 Lumen Christi Lane	Salisbury
Rowan	Salisbury Academy	2210 Jake Alexander Blvd. North	Salisbury
Rowan	Salisbury Adventist School	305 Rudolph Rd.	Salisbury
Rowan	Salisbury Christian School	225 Majestic Drive	Salisbury
Rowan	The Legacy School	315 Webb Rd	Salisbury

[1] Emergency medical services (By State of North Carolina). (2023, March 22). NC OneMap. https://www.nconemap.gov/datasets/e43a159e4f584a3b8d5ffb797abc48a9_0/explore

County	School Name	Address	City
Rowan	Uwharrie Learning Center	665 Timber Trail	Gold Hill
Rowan	Yadkin Path Montessori	2135 Bringle Ferry Road	Salisbury

Table F- 2: Hospitals in the planning area[2]

Notes	Hospital Name	County	City	Zip Code
Behavioral Only	Davis Regional Medical Center	Iredell	Statesville	28687
	Iredell Memorial	Iredell	Statesville	28677
	Lake Norman Regional Medical Center	Iredell	Mooresville	28117
	Rowan Medical Center	Rowan	Salisbury	28144
	Salisbury - W.G. (Bill) Hefner VA Medical Center	Rowan	Salisbury	28144

Table F- 3: Law Enforcement Agencies in the planning area[3]

Name	Address	City	Zip	County
North Carolina State Highway Patrol - Salisbury Satellite Hangar	3670 Airport Loop	Salisbury	28147	Rowan
Granite Quarry Police Department	143 North Salisbury Avenue	Granite Quarry	28146	Rowan
East Spencer Police Department	105 South Long Street	Salisbury	28144	Rowan
Mooresville Police Department	2847 Charlotte Hwy	Mooresville	28115	Iredell
United States Marshals Service - Statesville	200 West Broad Street	Statesville	28677	Iredell
Town Of Troutman Police Department	400 North Eastway Drive	Troutman	28166	Iredell
North Carolina State Highway Patrol Troop E Headquarters / Troop E District Iii	5780 South Main Street	Salisbury	28147	Rowan

[2] State of North Carolina. (2023). Hospitals [Dataset]. In NC OneMap. https://www.nconemap.gov/datasets/0b5a8fe009144b9bbeb7c4cee9ab7fa9_0/explore
[3] State of North Carolina. (2023b). Law Enforcement Locations [Dataset]. In NC OneMap. https://www.nconemap.gov/search?groupIds=2b0fd568b5234936a139f67a7ccdb014

Name	Address	City	Zip	County
Iredell County Detention Center	221 East Water Street	Statesville	28677	Iredell
Iredell County Sheriffs Department	225 East Water Street	Statesville	28677	Iredell
Iredell County Sheriffs Department - Mooresville	610 East Center Avenue	Mooresville	28115	Iredell
Lake Norman Park Ranger Station	159 Inland Sea Lane	Troutman	28166	Iredell
City Of China Grove Police Department	333 North Main Street	China Grove	28023	Rowan
North Carolina State Highway Patrol Troop F District Iv	905 Carolina Avenue North	Statesville	28677	Iredell
City Of Rockwell Police Department	303 West Main Street	Rockwell	28138	Rowan
City Of Salisbury Police Department	130 East Liberty Street	Salisbury	28144	Rowan
City Of Spencer Police Department	600 South Salisbury Avenue	Spencer	28159	Rowan
Rowan County Sheriffs Department	232 North Main Street	Salisbury	28144	Rowan
Cleveland Police Department	100 North Depot Street	Cleveland	27013	Rowan
City Of Landis Police Department	136 North Central Avenue	Landis	28088	Rowan
Statesville Police Department	330 South Tradd Street	Statesville	28677	Iredell

Table F- 4: Fire departments in the planning area[4]

Name	Address	City	County	Zip
Atwell Township Fire Department, Incorporated	135 Concordia Church Road	Mooresville	Rowan	28115
Atwell Township Fire Department, Incorporated	8480 Unity Church Rd.	Kannapolis	Rowan	28081
Bostian Heights Fire Department, Inc.	8211 Old Concord Rd	Salisbury	Rowan	28146
Central School Volunteer Fire Department, Inc.	4634 Wilkesboro Hwy	Statesville	Iredell	28625
Central School Volunteer Fire Department, Inc.	117 Barkers Grove Rd.	Union Grove	Iredell	28689
China Grove Fire Department	333 North Main Street	China Grove	Rowan	28023

[4] Adam Blythe. (2024). NC Fire Stations [Dataset]. In NC OneMap. https://www.nconemap.gov/datasets/6f4fe0c55b0d4cbb92877e461d698c29_0/explore?location=34.621175%2C-80.017373%2C6.48

Name	Address	City	County	Zip
Cleveland Community Volunteer Fire Department, Inc.	11170 Statesville Blvd	Cleveland	Rowan	27013
Cleveland Community Volunteer Fire Department, Inc.	3360 Third Creek Church Road	Cleveland	Rowan	27013
Cool Springs Volunteer Fire Department, Inc.	672 Mocksville Highway	Statesville	Iredell	28625
Cool Springs Volunteer Fire Department, Inc.	144 Fifth Creek Rd	Statesville	Iredell	28625
East Gold Hill Volunteer Fire Department, Inc.	820 Old US 80 Hwy	Gold Hill	Rowan	28071
East Spencer Fire Department	201 S. LONG ST	East Spencer	Rowan	28039
Ebenezer Volunteer Fire Department, Inc.	1002 Turnerburg Hwy	Statesville	Iredell	28625
Ellis Cross-Country Fire Department, Inc.	3420 Old Mocksville Road	Salisbury	Rowan	28144
Enochville Fire and Rescue Department, Inc.	808 N. Enochville Ave	China Grove	Rowan	28023
Faith Fire Department	1005 Raney St. Faith, NC	Faith	Rowan	28041
Franklin Township Fire Department, Incorporated	4370 US 601 Hwy	Salisbury	Rowan	28144
Franklin Township Fire Department, Incorporated	4370 US 70 Hwy	Salisbury	Rowan	28147
Granite Quarry Fire Department	143 North Salisbury Avenue	Granite Quarry	Rowan	28072
Harmony Volunteer Fire Department, Inc.	3351 Harmony Hwy	Harmony	Iredell	28634
Harmony Volunteer Fire Department, Inc.	645 Olin Loop Road	Olin	Iredell	28660
Lake Norman Volunteer Fire and Rescue Department	1518 Brawley School Road	Mooresville	Iredell	28117
Landis Municipal Fire Department, Inc.	136 N. Central Ave.	Landis	Rowan	28088
Landis Municipal Fire Department, Inc.	312 S. Main Street	Landis	Rowan	28088
Locke Township Fire Department, Incorporated	5405 Mooresville Rd	Salisbury	Rowan	28147
Locke Township Fire Department, Incorporated	1819 Moorseville Road	Salisbury	Rowan	28147
Locke Township Fire Department, Incorporated	2220 Grace Church Road	Salisbury	Rowan	28147
Miller's Ferry Road Fire Department, Incorporated	2650 Long Ferry Rd	Salisbury	Rowan	28146
Miller's Ferry Road Fire Department, Incorporated	4590 Long Ferry Road	Salisbury	Rowan	28146

Name	Address	City	County	Zip
Monticello Volunteer Fire Department, Inc.	160 Travis Loop	Statesville	Iredell	28625
Mooresville Fire Department	457 North Main Street	Mooresville	Iredell	28115
Mooresville Fire Department	186 Knob Hill Road	Mooresville	Iredell	28117
Mooresville Fire Department	1023 Shearers Road	Mooresville	Iredell	28115
Mooresville Fire Department	2014 Charlotte Hwy	Mooresville	Iredell	28117
Mooresville Fire Department	125 Balmy Lane	Mooresville	Iredell	28115
Mooresville Fire Department	115 Manufactures Blvd	Mooresville	Iredell	28115
Mount Mourne Volunteer Fire Department, Inc.	1577 Mecklenburg Highway	Mooresville	Iredell	28115
Pooletown Volunteer Fire Department, Inc.	225 Richfield Road	Richfield	Rowan	28137
Pooletown Volunteer Fire Department, Inc.	2000 Reeves Island Road	Richfield	Rowan	28137
Rockwell City Fire Department	116 South Cherry Street	Rockwell	Rowan	28138
Rockwell Rural Fire Department, Incorporated	320 Link St.	Rockwell	Rowan	28138
Rockwell Rural Fire Department, Incorporated	11800 Beatty Ford Road	Rockwell	Rowan	28138
Rowan-Iredell Voluntary Fire Department, Incorporated	5757 Chenault Rd	Cleveland	Rowan	27013
Salisbury Fire Department	514 East Innes Street	Salisbury	Rowan	28144
Salisbury Fire Department	2312 S. Main St.	Salisbury	Rowan	28144
Salisbury Fire Department	1604 W. Innes St.	Salisbury	Rowan	28144
Salisbury Fire Department	2325 Statesville Blvd.	Salisbury	Rowan	28144
Salisbury Fire Department	310 Cedar Springs Road	Salisbury	Rowan	28147
Scotch-Irish Fire Department, Incorporated	3220 Needmore Rd	Woodleaf	Rowan	27054
Shepherds Fire-Rescue, Inc.	2014 Charlotte Hwy	Mooresville	Iredell	28117
Shepherds Fire-Rescue, Inc.	204 Doolie Road	Mooresville	Iredell	28117
South Iredell Volunteer Fire Department, Inc.	651 Brumley Rd	Mooresville	Iredell	28115
South Salisbury Township Fire Department, Incorporated	3207 Old Concord Road	Salisbury	Rowan	28146

Name	Address	City	County	Zip
Spencer Fire Department	208 S Salisbury Ave	Spencer	Rowan	28159
Statesville Fire Department	822 Fifth St.	Statesville	Iredell	28677
Statesville Fire Department	110 Security Dr.	Statesville	Iredell	28677
Statesville Fire Department	779 Eastside Dr.	Statesville	Iredell	28677
Statesville Fire Department	115 Martin Lane	Statesville	Iredell	28687
Trinity Volunteer Fire Department, Inc.	2968 Wilkesboro Hwy	Statesville	Iredell	28625
Trinity Volunteer Fire Department, Inc.	581 Pisgah Church Road	Statesville	Iredell	28625
Troutman Fire Department, Inc.	125 N Main St	Troutman	Iredell	28166
Troutman Fire Department, Inc.	1506 Perth Road	Troutman	Iredell	28116
Troutman Fire Department, Inc.	472 Pineville Road	Troutman	Iredell	28116
Union Grove Volunteer Fire Department, Inc.	1994 W. Memorial Hwy	Union Grove	Iredell	28689
Union Volunteer Fire Department, Incorporated	1470 Union Church Road	Salisbury	Rowan	28146
Shepherds Volunteer Fire Department	234 Bethesda Rd	Statesville	Iredell	28677
Shepherds Volunteer Fire Department	1486 Oswalt Amity Rd	Cleveland	Iredell	27013
West Iredell Volunteer Fire Department, Incorporated	2136 Old Mountain Road	Statesville	Iredell	28625
West Iredell Volunteer Fire Department, Incorporated	294 Sharon School Road	Statesville	Iredell	28677
West Liberty Volunteer Fire Department, Inc.	135 St. Matthews Church Rd.	Salisbury	Rowan	28146
West Liberty Volunteer Fire Department, Inc.	9000 Bringle Ferry Rd.	Salisbury	Rowan	28146
West Rowan Volunteer Fire Department, Inc.	2840 Graham Road	Mount Ulla	Rowan	28125
West Rowan Volunteer Fire Department, Inc.	781 Grampian Road	Mount Ulla	Rowan	28125
West Rowan Volunteer Fire Department, Inc.	235 Back Creek Church Road	Mount Ulla	Rowan	28125
West Rowan Volunteer Fire Department, Inc.	17575 Mooresville Rd	Mooresville	Rowan	28115
Woodleaf Volunteer Fire Department, Inc.	3500 NC 801 Hwy.	Woodleaf	Rowan	27054

Iredell-Rowan: Social Equity Questionnaire

1. **County/Jurisdiction:** What county or jurisdiction are you representing today?

ID ↑	Name	Responses
1	anonymous	Rowan County
2	anonymous	Iredell County
3	anonymous	Rowan/ City of Salisbury
4	anonymous	City of Statesville

2. **Identifying Communities and Populations Lacking Resources:** Which neighborhoods or groups of people do not have enough resources to prepare for disasters and become stronger against them?

ID ↑	Name	Responses
1	anonymous	Elderly
2	anonymous	Homeless and economically challenged. South Statesville, eastern Iredell County, Love Valley community.
3	anonymous	No data or recent evaluation on this
4	anonymous	South Statesville, areas with significant amount of homes along Free Nancy Branch flood area

3. **Identifying Gaps:** What resources are missing that prevent these communities from getting the help that they need to plan for and reduce risks from natural, weather-related disasters?

ID ↑	Name	Responses
1	anonymous	Ability to physically prepare residence, limit damage when issues occur, or repair after damage
2	anonymous	Suitable housing, funds for alternative housing should their home be unlivable.
3	anonymous	Need an evaluation to determine
4	anonymous	funding to elevate houses, repair and replace storm infrastructure, education about floodplain

4. **Disproportionate Benefit to Wealthy Areas:** Do wealthier communities or neighborhoods get more support than under-resourced ones when it comes to preparing for disasters?

5. **Barriers to Preparedness:** What barriers make it harder for underserved communities to stay safe during disasters?

ID ↑	Name	Responses
1	anonymous	Lack of funds to property prepare.
2	anonymous	Lack of funding, inadequate staff dedicated to task
3	anonymous	education

6. **Non-traditional Resources:** What other things (ie., resources or partnerships) besides money and the usual supports, can we use to mak e communities more prepared against natural disasters?

ID ↑	Name	Responses
1	anonymous	Warehouse with donations - could be leftover items from construction projects
2	anonymous	Unsure.
3	anonymous	Organization of educational awareness resources, additional resources (funding, real assets, Folks dedicated to organize)
4	anonymous	knowledge, educating the public

7. **Specific Concerns:** What issues do we need to consider when planning for disasters, preparing for support, and distributing resources in our area?

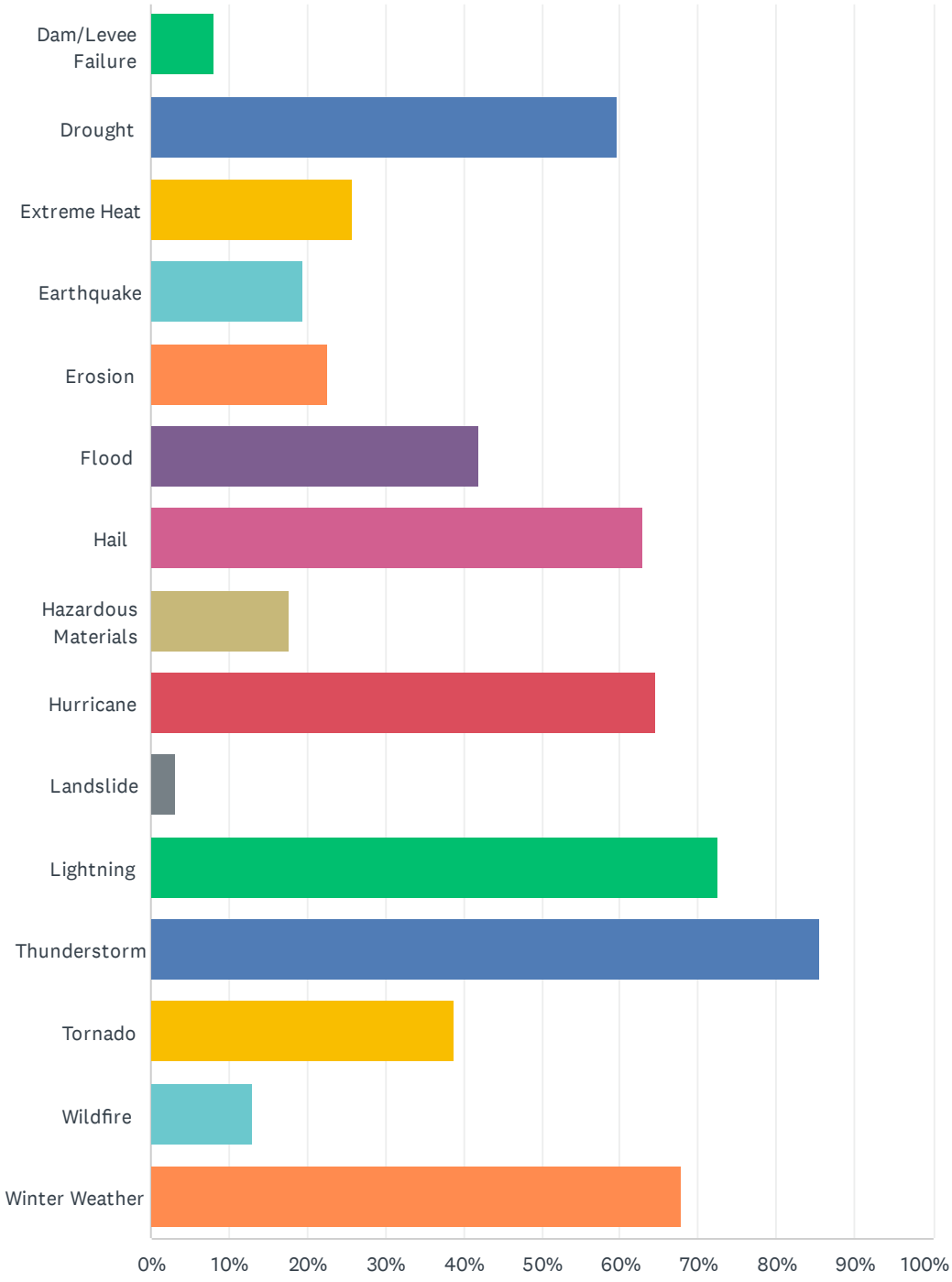
ID ↑	Name	Responses
1	anonymous	Have a volunteer force specifically to respond after or potentially during to limit storm damage
2	anonymous	Geography. Iredell County is large and rapidly growing so multiple CRDPs would be necessary to distribute resources.
3	anonymous	Awareness, hardened structures, planning
4	anonymous	Mostly storm events, downed trees and electrical lines, flooding, storm drain and culvert failures.

8. **Engagement Strategies:** How can we get everyone in the community involved in disaster planning?

ID ↑	Name	Responses
1	anonymous	Impossible to get everyone but continue with all aspects of media
2	anonymous	Never get everyone involved but our social media campaigns have reached approximately 90% of households.
3	anonymous	Great question
4	anonymous	knock on doors, mailers, community meetings

Q1 Which of these natural hazards have you experienced? (Check all that apply.)

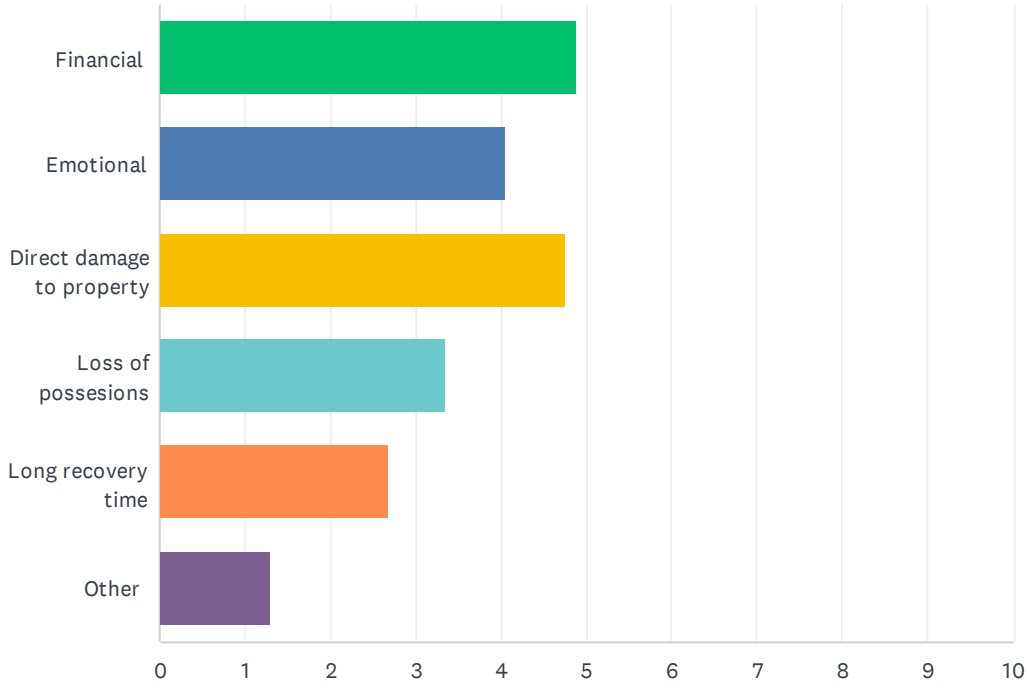
Answered: 62 Skipped: 1



ANSWER CHOICES	RESPONSES	
Dam/Levee Failure	8.06%	5
Drought	59.68%	37
Extreme Heat	25.81%	16
Earthquake	19.35%	12
Erosion	22.58%	14
Flood	41.94%	26
Hail	62.90%	39
Hazardous Materials	17.74%	11
Hurricane	64.52%	40
Landslide	3.23%	2
Lightning	72.58%	45
Thunderstorm	85.48%	53
Tornado	38.71%	24
Wildfire	12.90%	8
Winter Weather	67.74%	42
Total Respondents: 62		

Q2 What was the most difficult part for you in recovering from past disasters that you have experienced? (1 being most difficult and 6 being least difficult.)

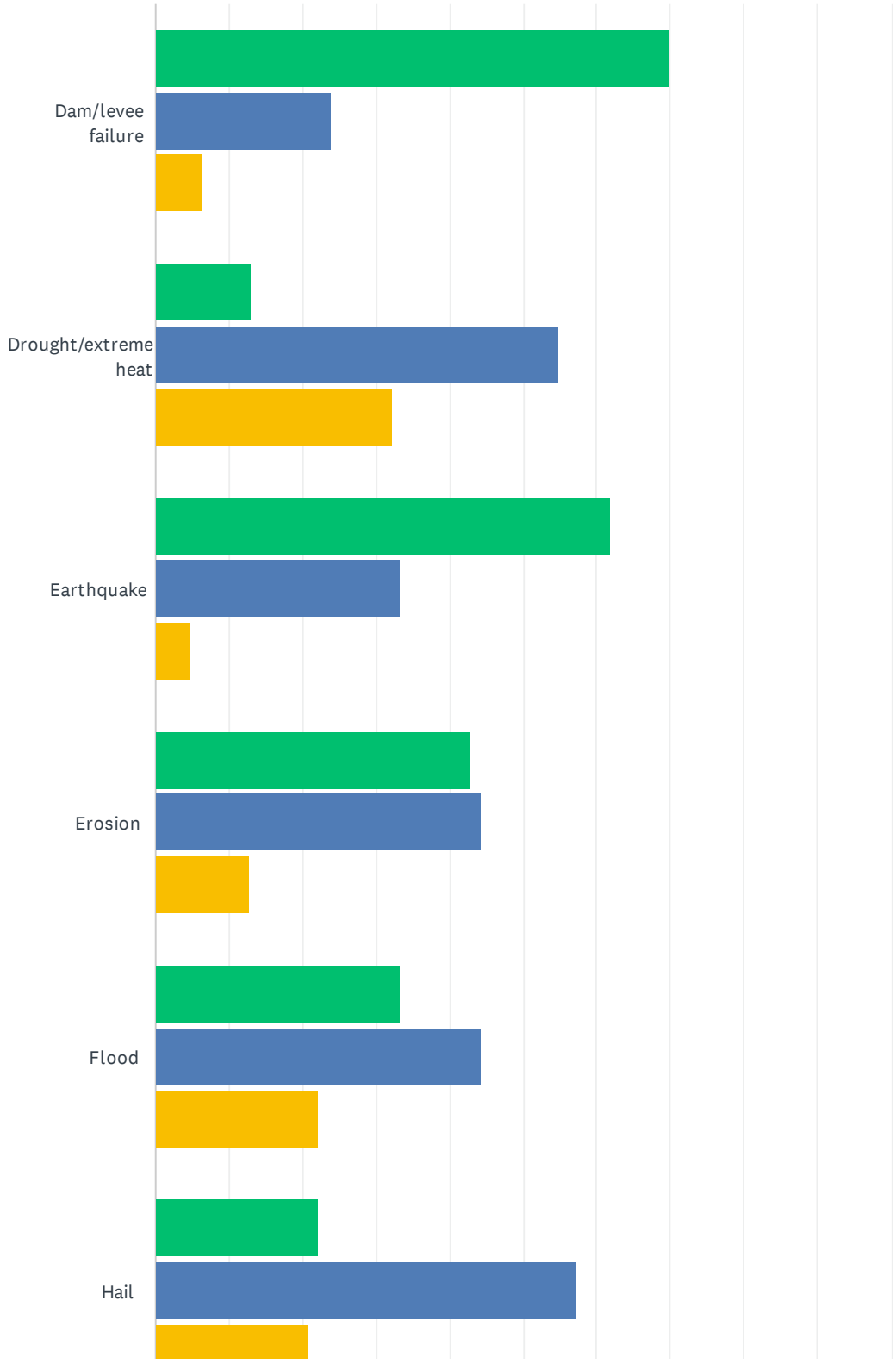
Answered: 63 Skipped: 0

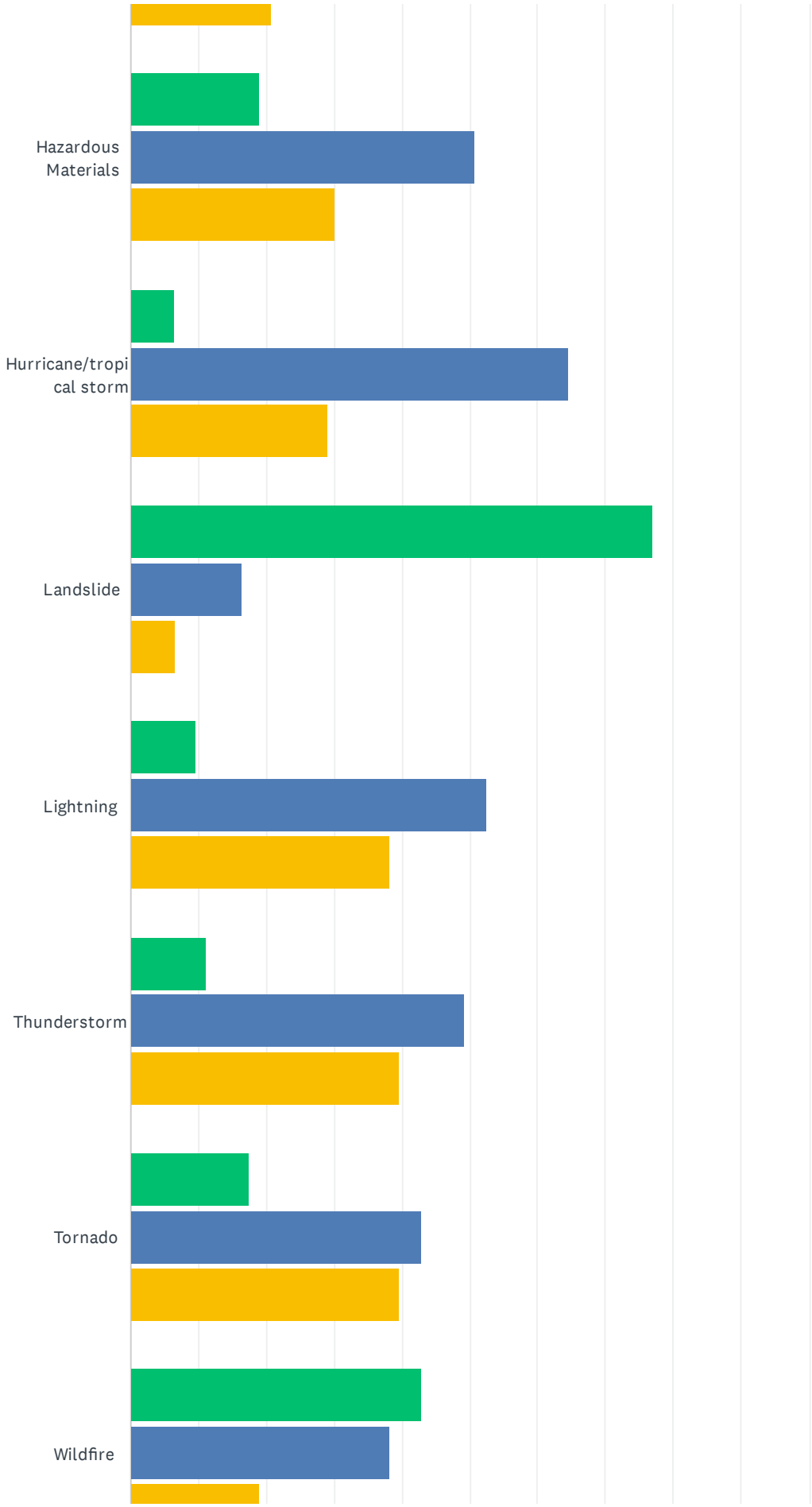


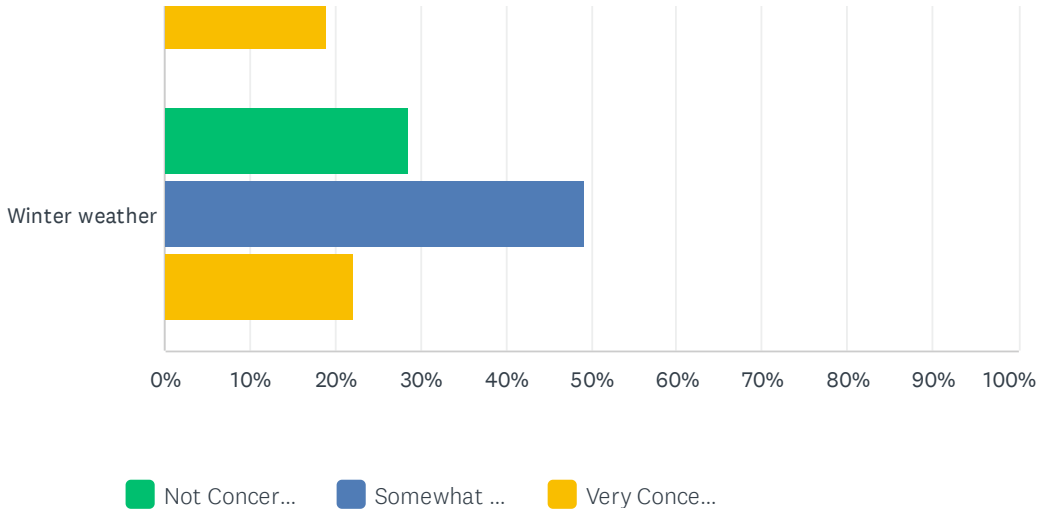
	1	2	3	4	5	6	TOTAL	SCORE
Financial	36.51% 23	31.75% 20	17.46% 11	12.70% 8	1.59% 1	0.00% 0	63	4.89
Emotional	19.05% 12	22.22% 14	23.81% 15	19.05% 12	11.11% 7	4.76% 3	63	4.05
Direct damage to property	34.92% 22	28.57% 18	22.22% 14	7.94% 5	3.17% 2	3.17% 2	63	4.75
Loss of possesions	1.59% 1	14.29% 9	22.22% 14	44.44% 28	14.29% 9	3.17% 2	63	3.35
Long recovery time	4.76% 3	3.17% 2	12.70% 8	15.87% 10	61.90% 39	1.59% 1	63	2.68
Other	3.17% 2	0.00% 0	1.59% 1	0.00% 0	7.94% 5	87.30% 55	63	1.29

Q3 How concerned are you about the possibility of your community experiencing each of these natural hazards? (Check the corresponding circle for each natural hazard.)

Answered: 63 Skipped: 0



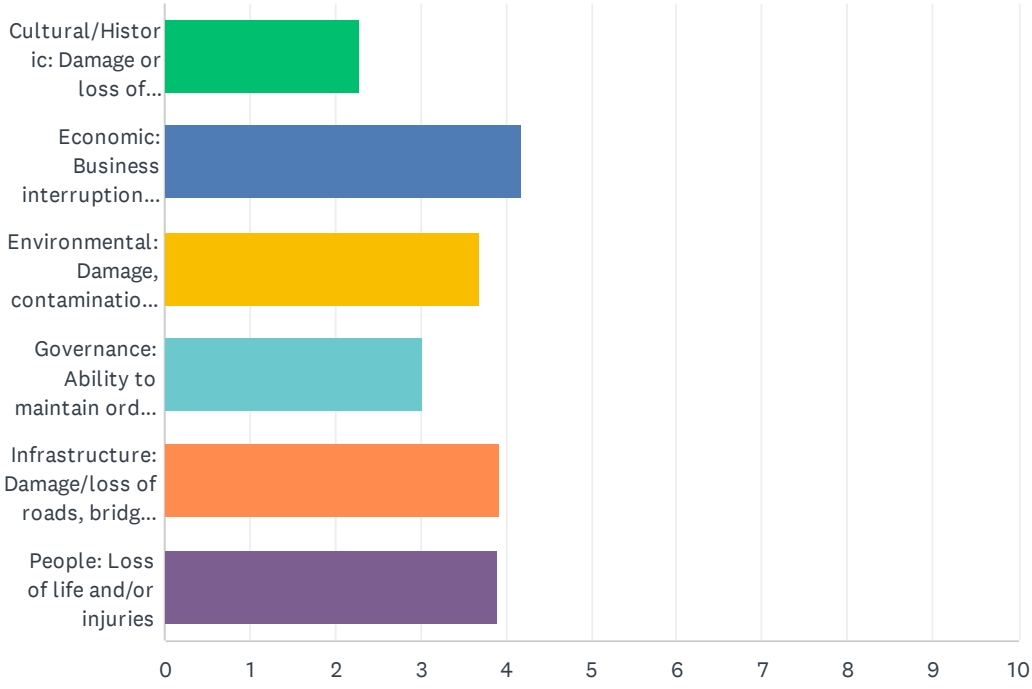

Hazardous Materials
Hurricane/tropical storm
Landslide
Lightning
Thunderstorm
Tornado
Wildfire



	NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL	WEIGHTED AVERAGE
Dam/levee failure	69.84% 44	23.81% 15	6.35% 4	63	1.37
Drought/extreme heat	12.90% 8	54.84% 34	32.26% 20	62	2.19
Earthquake	61.90% 39	33.33% 21	4.76% 3	63	1.43
Erosion	42.86% 27	44.44% 28	12.70% 8	63	1.70
Flood	33.33% 21	44.44% 28	22.22% 14	63	1.89
Hail	22.22% 14	57.14% 36	20.63% 13	63	1.98
Hazardous Materials	19.05% 12	50.79% 32	30.16% 19	63	2.11
Hurricane/tropical storm	6.45% 4	64.52% 40	29.03% 18	62	2.23
Landslide	77.05% 47	16.39% 10	6.56% 4	61	1.30
Lightning	9.52% 6	52.38% 33	38.10% 24	63	2.29
Thunderstorm	11.11% 7	49.21% 31	39.68% 25	63	2.29
Tornado	17.46% 11	42.86% 27	39.68% 25	63	2.22
Wildfire	42.86% 27	38.10% 24	19.05% 12	63	1.76
Winter weather	28.57% 18	49.21% 31	22.22% 14	63	1.94

Q4 In your opinion, which of the following categories are more likely to be impacted by natural hazards in your community? (Rank the community assets in order of likeliness, 1 being most likely and 6 being least likely.) Please note, the list will automatically re-order itself as you make your selections. You can also drag and drop the items on the list to reorder them.

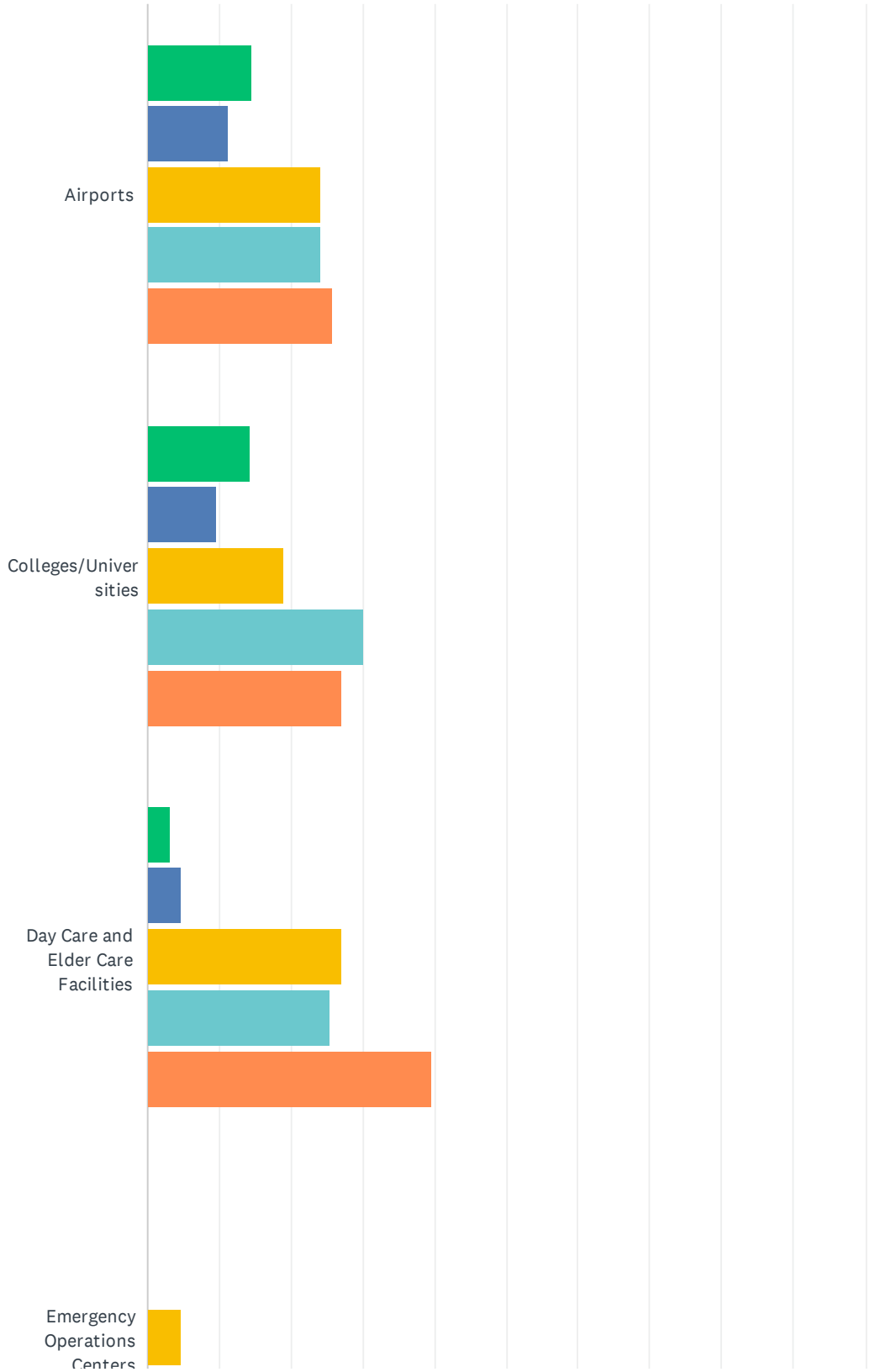
Answered: 63 Skipped: 0

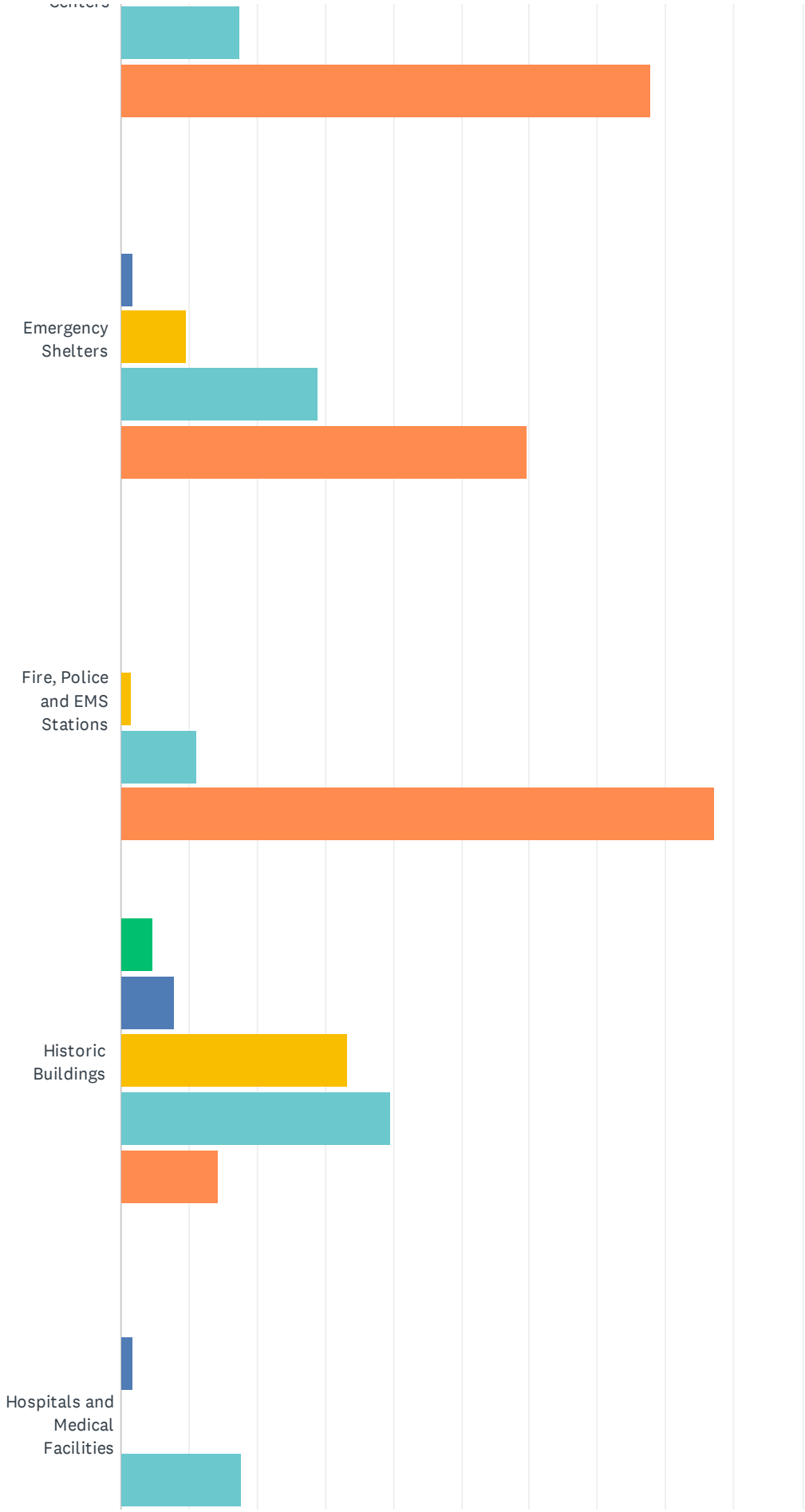


	1	2	3	4	5	6	TOTAL	SCORE
Cultural/Historic: Damage or loss of libraries, museums, historic properties, etc.	9.52% 6	1.59% 1	6.35% 4	17.46% 11	20.63% 13	44.44% 28	63	2.29
Economic: Business interruptions/closures, job losses, etc.	17.46% 11	31.75% 20	20.63% 13	15.87% 10	9.52% 6	4.76% 3	63	4.17
Environmental: Damage, contamination or loss of forests, wetlands, waterways, etc.	17.46% 11	19.05% 12	20.63% 13	7.94% 5	26.98% 17	7.94% 5	63	3.68
Governance: Ability to maintain order and/or provide public amenities and services	6.35% 4	9.52% 6	22.22% 14	26.98% 17	12.70% 8	22.22% 14	63	3.03
Infrastructure: Damage/loss of roads, bridges, utilities, schools, etc.	14.29% 9	28.57% 18	14.29% 9	22.22% 14	19.05% 12	1.59% 1	63	3.92
People: Loss of life and/or injuries	34.92% 22	9.52% 6	15.87% 10	9.52% 6	11.11% 7	19.05% 12	63	3.90

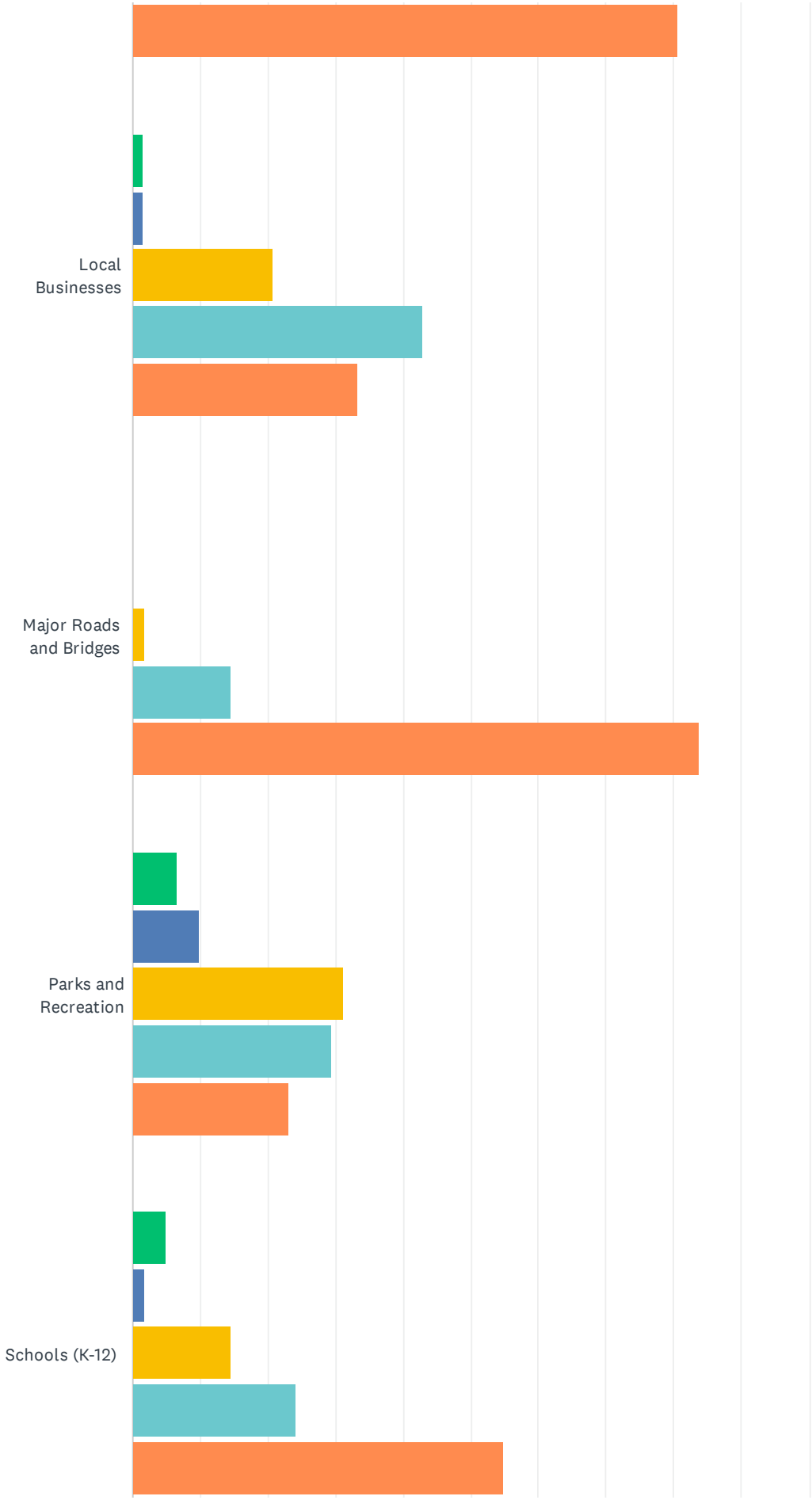
Q5 How important is each of the following specific community assets to you? (Check the appropriate circle for each asset.)

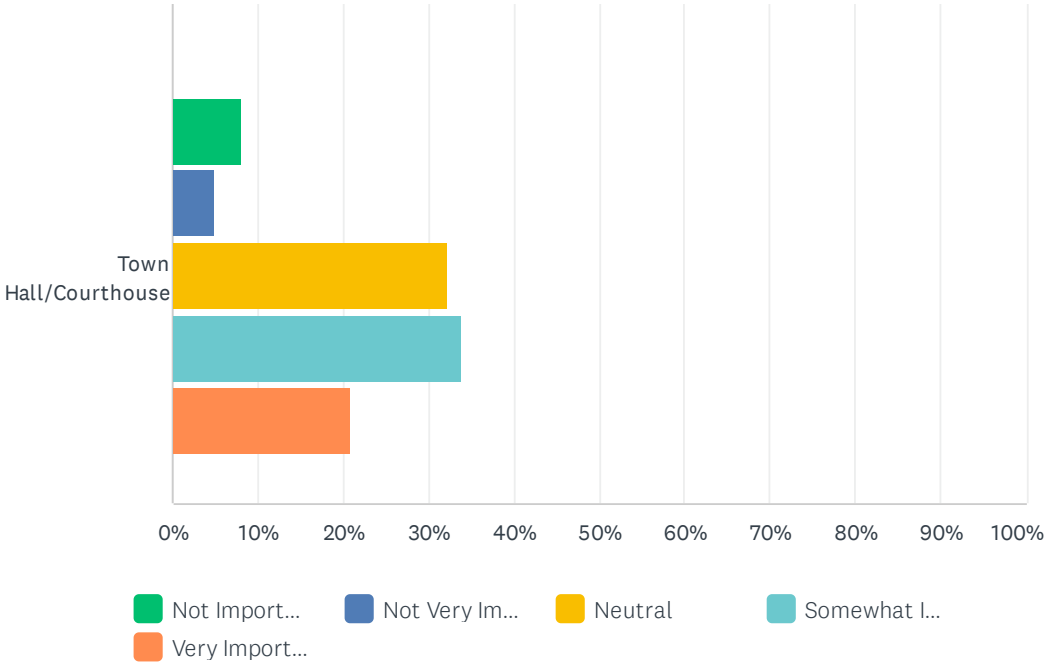
Answered: 63 Skipped: 0




Emergency Shelters
Fire, Police and EMS Stations
Historic Buildings
Hospitals and Medical Facilities

572

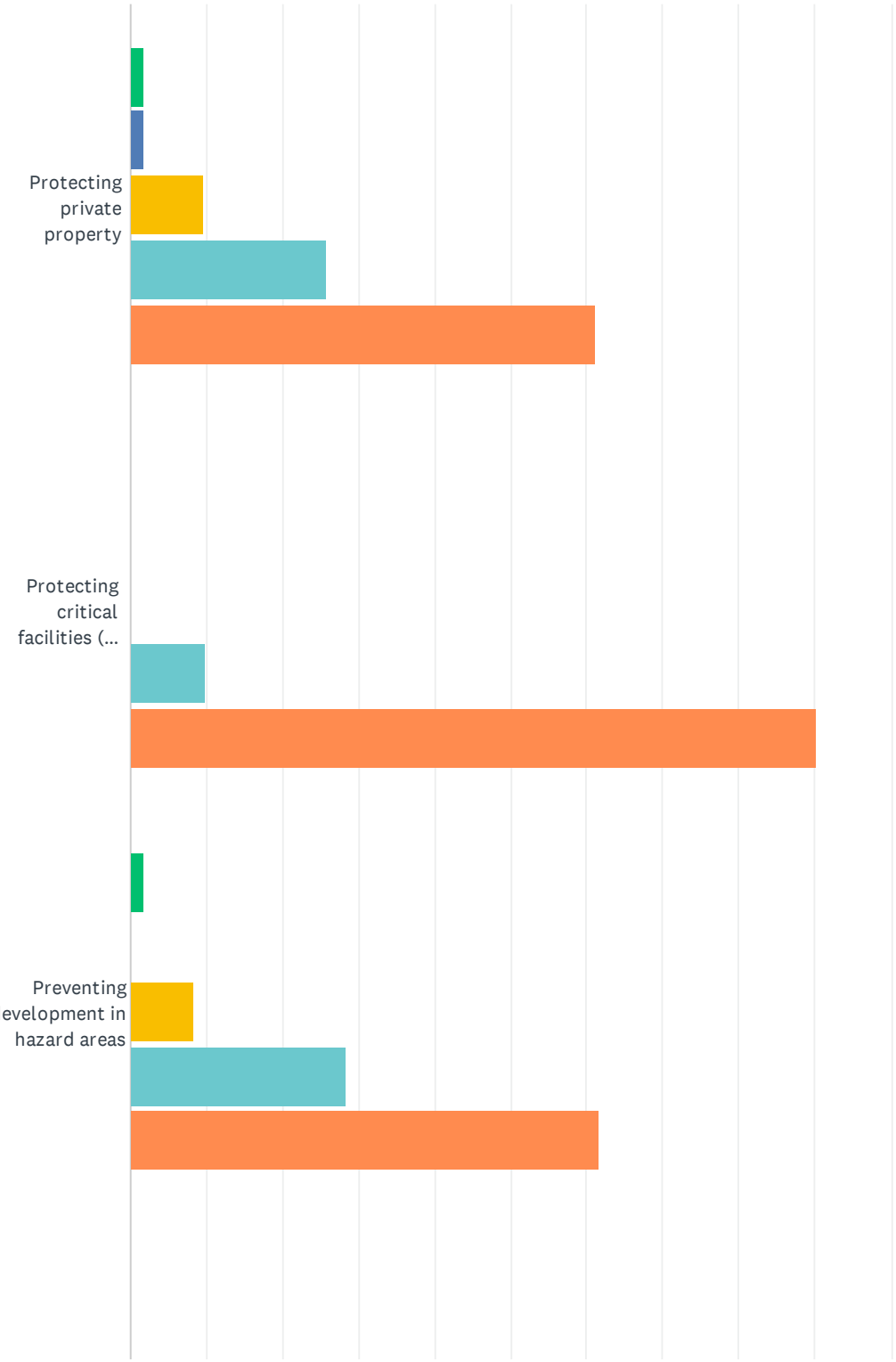

Local Businesses
Major Roads and Bridges
Parks and Recreation
Schools (K-12)



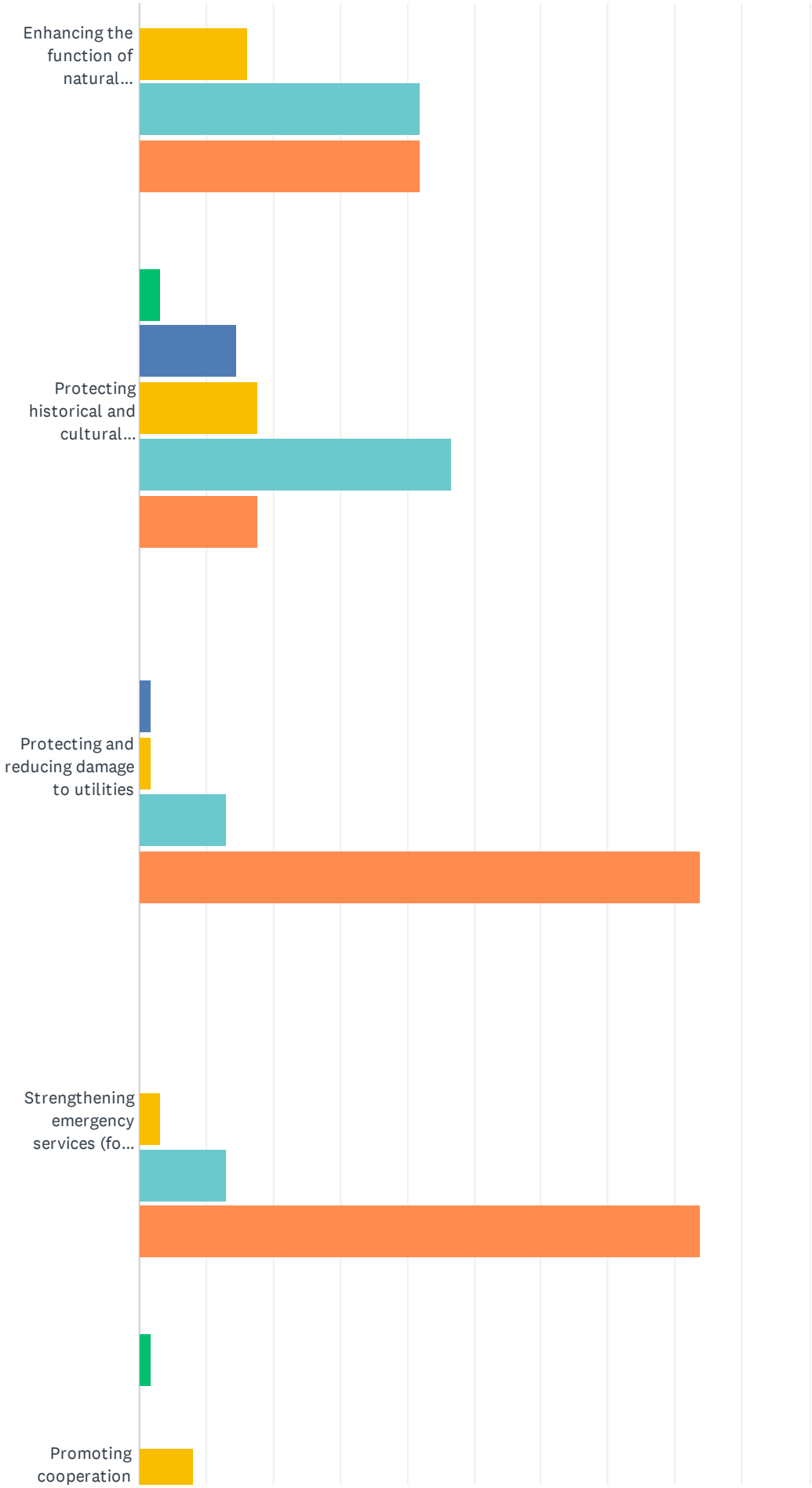
	NOT IMPORTANT	NOT VERY IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	VERY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Airports	14.52% 9	11.29% 7	24.19% 15	24.19% 15	25.81% 16	62	3.35
Colleges/Universities	14.29% 9	9.52% 6	19.05% 12	30.16% 19	26.98% 17	63	3.46
Day Care and Elder Care Facilities	3.17% 2	4.76% 3	26.98% 17	25.40% 16	39.68% 25	63	3.94
Emergency Operations Centers	0.00% 0	0.00% 0	4.76% 3	17.46% 11	77.78% 49	63	4.73
Emergency Shelters	0.00% 0	1.61% 1	9.68% 6	29.03% 18	59.68% 37	62	4.47
Fire, Police and EMS Stations	0.00% 0	0.00% 0	1.59% 1	11.11% 7	87.30% 55	63	4.86
Historic Buildings	4.76% 3	7.94% 5	33.33% 21	39.68% 25	14.29% 9	63	3.51
Hospitals and Medical Facilities	0.00% 0	1.61% 1	0.00% 0	17.74% 11	80.65% 50	62	4.77
Local Businesses	1.59% 1	1.59% 1	20.63% 13	42.86% 27	33.33% 21	63	4.05
Major Roads and Bridges	0.00% 0	0.00% 0	1.61% 1	14.52% 9	83.87% 52	62	4.82
Parks and Recreation	6.56% 4	9.84% 6	31.15% 19	29.51% 18	22.95% 14	61	3.52
Schools (K-12)	4.84% 3	1.61% 1	14.52% 9	24.19% 15	54.84% 34	62	4.23
Town Hall/Courthouse	8.06% 5	4.84% 3	32.26% 20	33.87% 21	20.97% 13	62	3.55

Q6 Natural hazards can have a significant impact on a community, but planning for these types of events can help lessen the impacts. Please tell us how important each statement is to you by checking the appropriate circle for each.

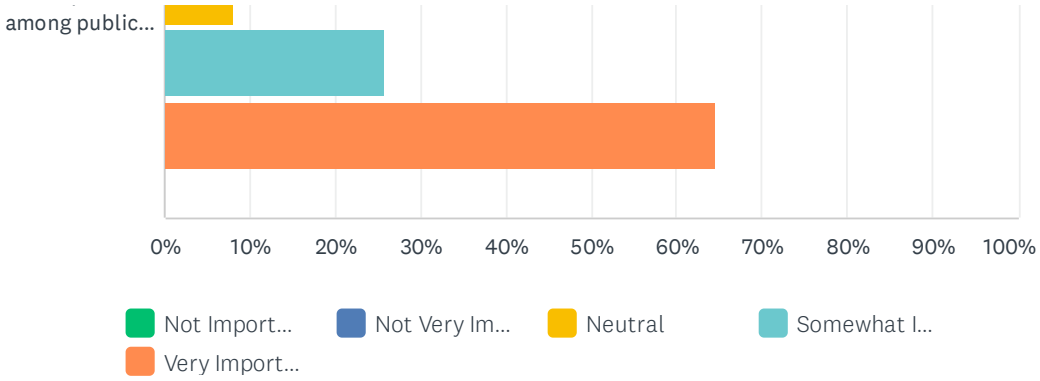
Answered: 63 Skipped: 0



Section 5, Item5.1



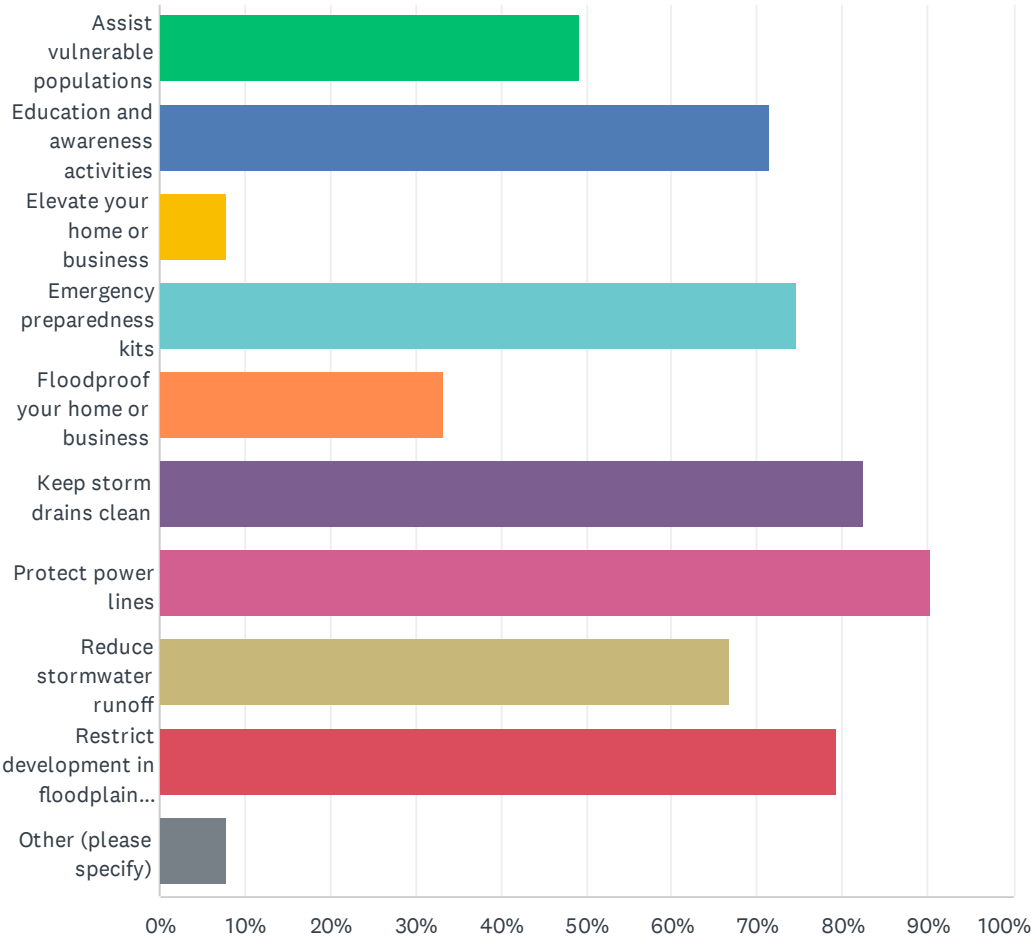
576



	NOT IMPORTANT	NOT VERY IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	VERY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Protecting private property	1.61% 1	1.61% 1	9.68% 6	25.81% 16	61.29% 38	62	4.44
Protecting critical facilities (for example, hospitals, police stations, fire stations, etc.)	0.00% 0	0.00% 0	0.00% 0	9.84% 6	90.16% 55	61	4.90
Preventing development in hazard areas	1.67% 1	0.00% 0	8.33% 5	28.33% 17	61.67% 37	60	4.48
Enhancing the function of natural features (for example, streams, wetlands, etc.)	0.00% 0	0.00% 0	16.13% 10	41.94% 26	41.94% 26	62	4.26
Protecting historical and cultural landmarks	3.23% 2	14.52% 9	17.74% 11	46.77% 29	17.74% 11	62	3.61
Protecting and reducing damage to utilities	0.00% 0	1.61% 1	1.61% 1	12.90% 8	83.87% 52	62	4.79
Strengthening emergency services (for example, police, fire, ambulance)	0.00% 0	0.00% 0	3.23% 2	12.90% 8	83.87% 52	62	4.81
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	1.61% 1	0.00% 0	8.06% 5	25.81% 16	64.52% 40	62	4.52

Q7 What are some steps that you and/or your local government could take to reduce or eliminate the risk of future natural hazard damages in your neighborhood?

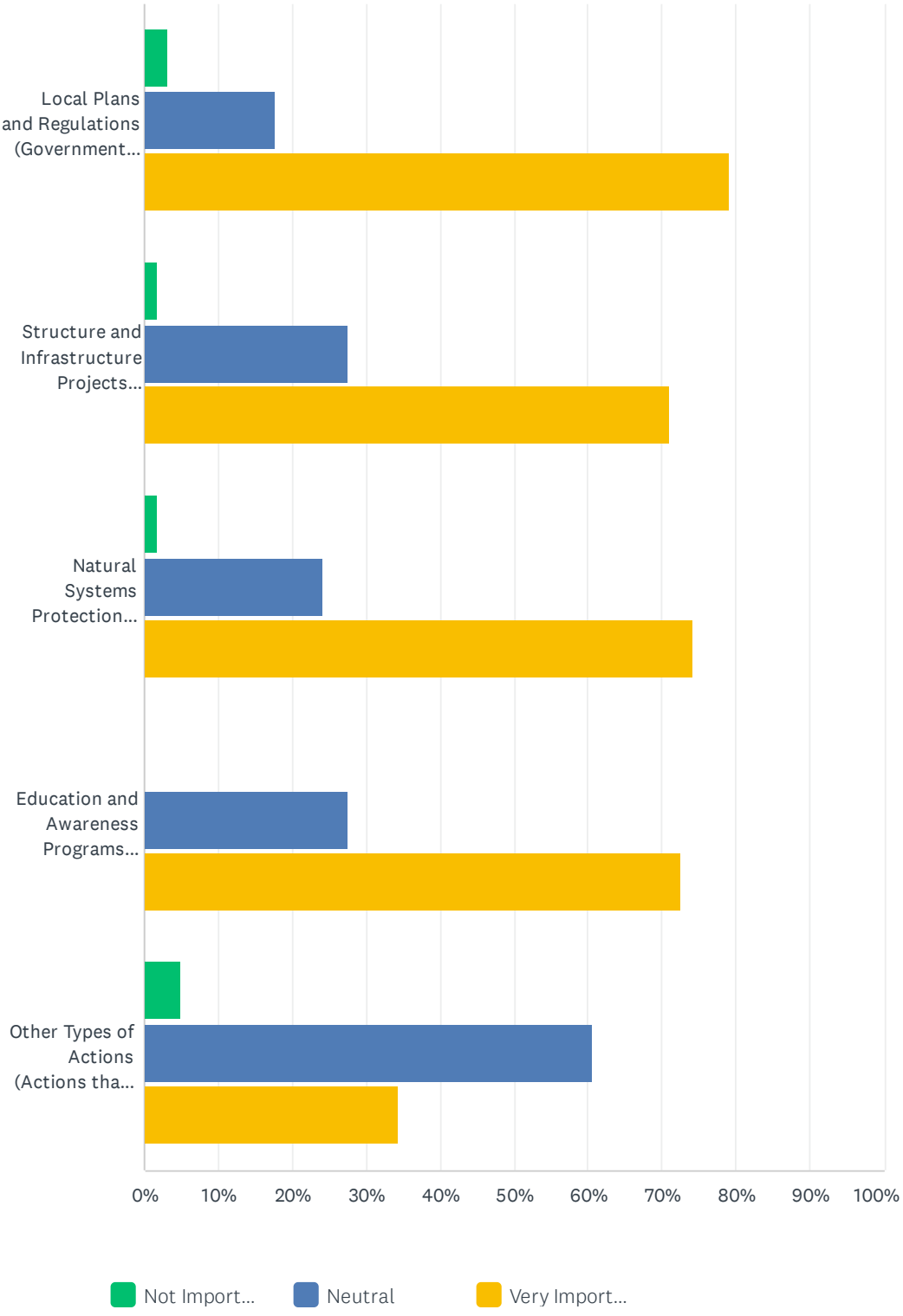
Answered: 63 Skipped: 0



ANSWER CHOICES	RESPONSES	
Assist vulnerable populations	49.21%	31
Education and awareness activities	71.43%	45
Elevate your home or business	7.94%	5
Emergency preparedness kits	74.60%	47
Floodproof your home or business	33.33%	21
Keep storm drains clean	82.54%	52
Protect power lines	90.48%	57
Reduce stormwater runoff	66.67%	42
Restrict development in floodplain areas	79.37%	50
Other (please specify)	7.94%	5
Total Respondents: 63		

Q8 A number of community-wide activities can reduce risk from natural hazards. Please tell us how important you think each one is for your community to consider pursuing.

Answered: 62 Skipped: 1

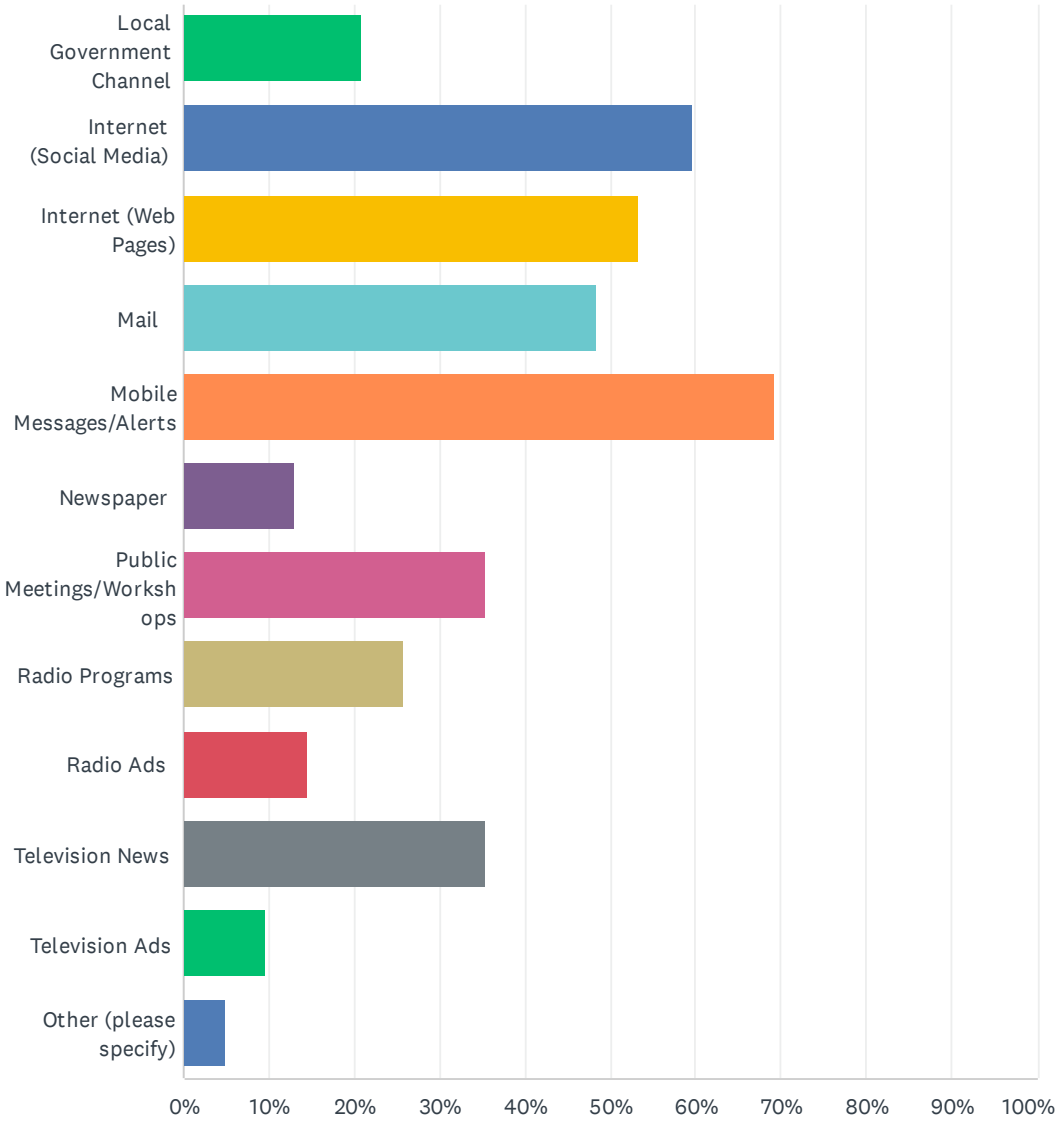


580

	NOT IMPORTANT	NEUTRAL	VERY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Local Plans and Regulations (Government policies or codes that influence the way land and buildings are developed and built.)	3.23% 2	17.74% 11	79.03% 49	62	2.76
Structure and Infrastructure Projects (Modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area.)	1.61% 1	27.42% 17	70.97% 44	62	2.69
Natural Systems Protection (Actions that minimize damage and losses and also preserve or restore the functions of natural systems.)	1.61% 1	24.19% 15	74.19% 46	62	2.73
Education and Awareness Programs (Actions that inform and educate citizens, elected officials and property owners about hazards and potential ways to mitigate them.)	0.00% 0	27.42% 17	72.58% 45	62	2.73
Other Types of Actions (Actions that are related to mitigation in ways that make sense to the local government that do not fall into one of the categories above.)	4.92% 3	60.66% 37	34.43% 21	61	2.30

Q9 What are the most effective ways for you to receive information about how to make your home and neighborhood more resistant to natural hazards?

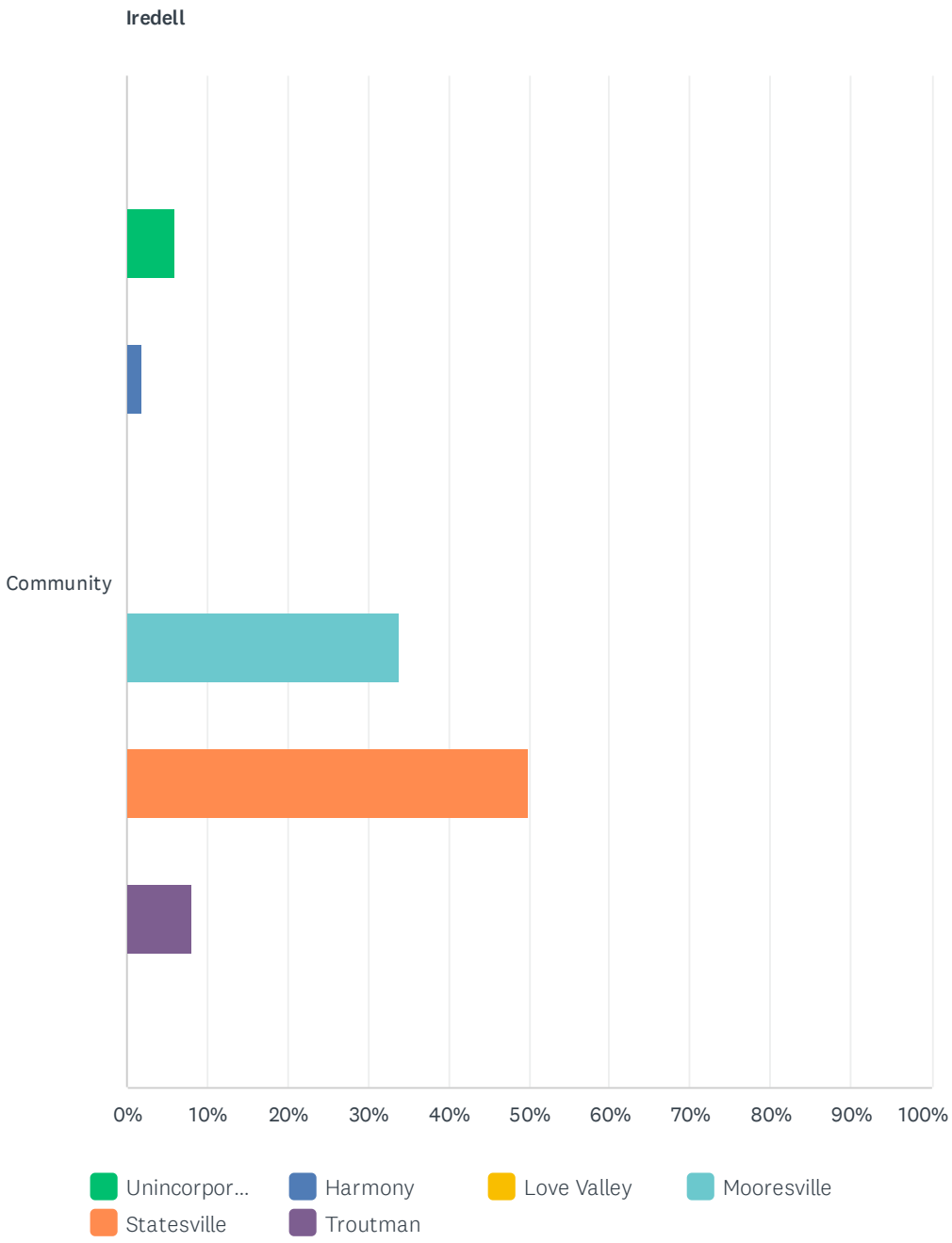
Answered: 62 Skipped: 1

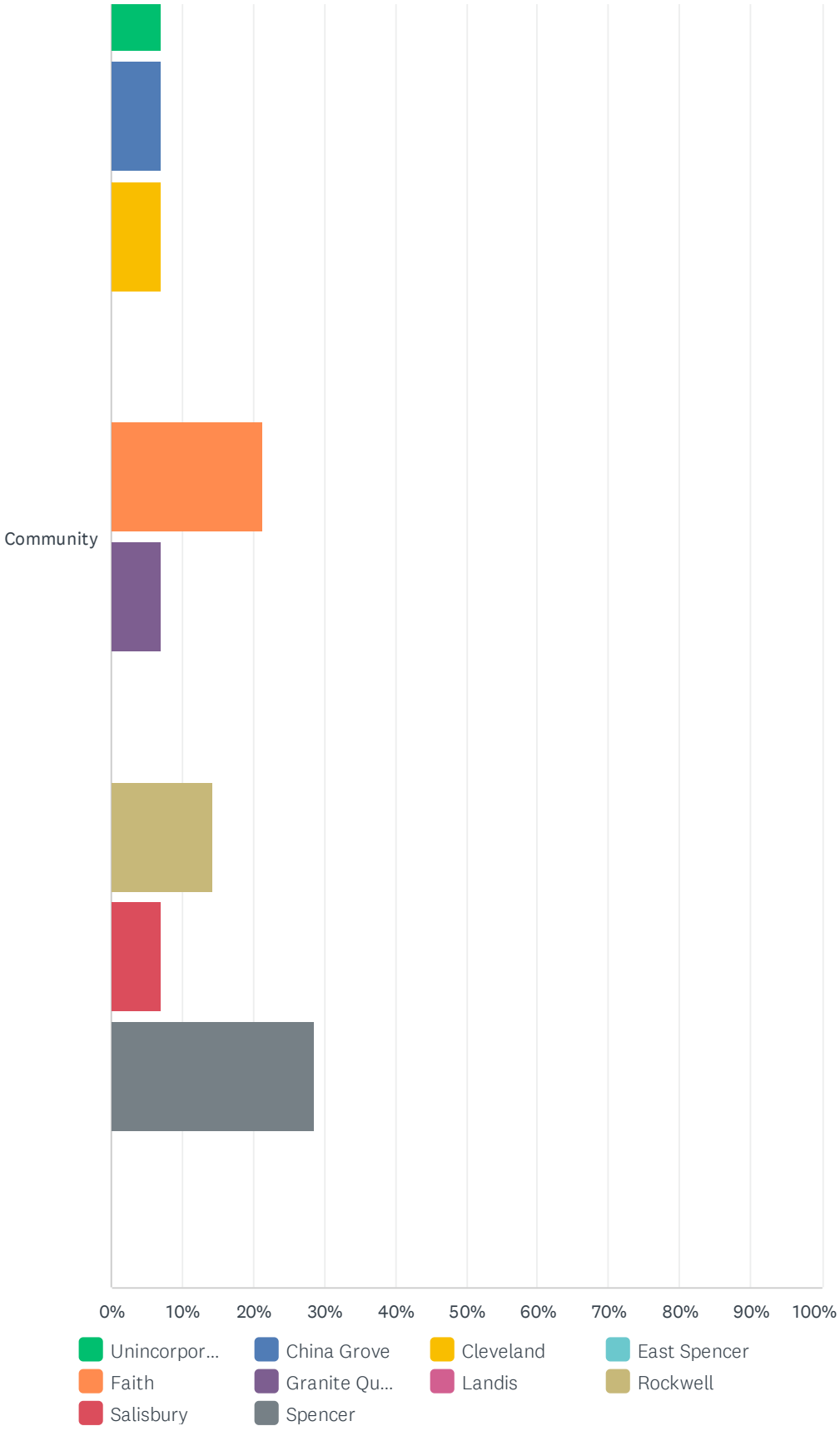


ANSWER CHOICES	RESPONSES	
Local Government Channel	20.97%	13
Internet (Social Media)	59.68%	37
Internet (Web Pages)	53.23%	33
Mail	48.39%	30
Mobile Messages/Alerts	69.35%	43
Newspaper	12.90%	8
Public Meetings/Workshops	35.48%	22
Radio Programs	25.81%	16
Radio Ads	14.52%	9
Television News	35.48%	22
Television Ads	9.68%	6
Other (please specify)	4.84%	3
Total Respondents: 62		

Q10 In which community do you live?

Answered: 62 Skipped: 1



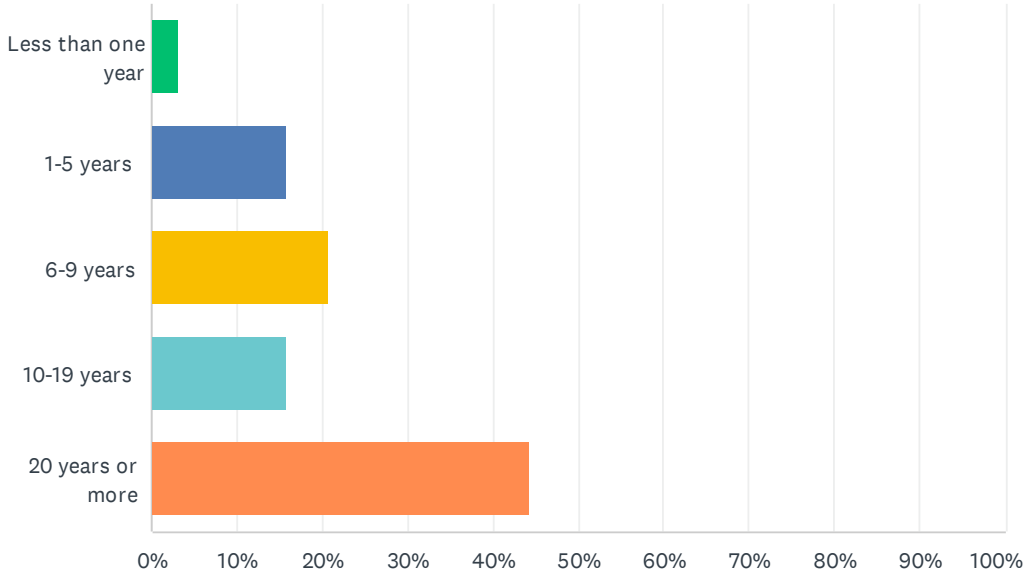

Community
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Unincorpor...
China Grove
Cleveland
East Spencer
Faith
Granite Qu...
Landis
Rockwell
Salisbury
Spencer

Iredell							
	UNINCORPORATED	HARMONY	LOVE VALLEY	MOORESVILLE	STATESVILLE	TROUTMAN	TOTAL
Community	6.00% 3	2.00% 1	0.00% 0	34.00% 17	50.00% 25	8.00% 4	50

Rowan									
	UNINCORPORATED	CHINA GROVE	CLEVELAND	EAST SPENCER	FAITH	GRANITE QUARRY	LANDIS	ROCKWELL	SA
Community	7.14% 1	7.14% 1	7.14% 1	0.00% 0	21.43% 3	7.14% 1	0.00% 0	14.29% 2	

Q11 How long have you lived in the Iredell-Rowan region?

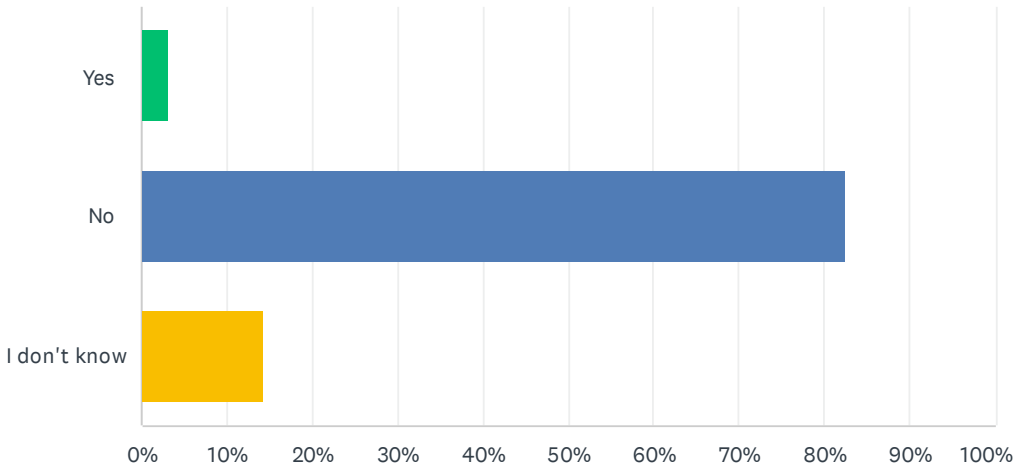
Answered: 63 Skipped: 0



ANSWER CHOICES	RESPONSES	
Less than one year	3.17%	2
1-5 years	15.87%	10
6-9 years	20.63%	13
10-19 years	15.87%	10
20 years or more	44.44%	28
TOTAL		63

Q12 Is your home located in a floodplain?

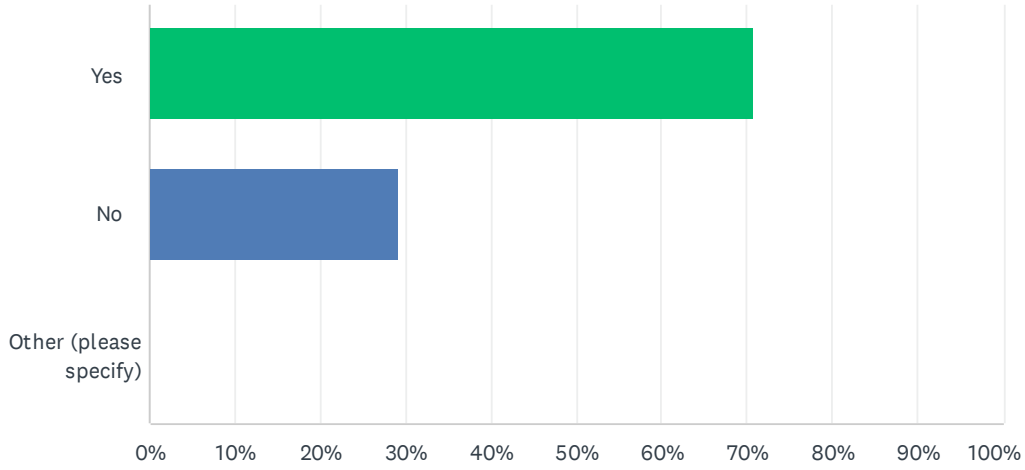
Answered: 63 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	3.17%	2
No	82.54%	52
I don't know	14.29%	9
TOTAL		63

Q13 Do you know how to determine if your property is located in a floodplain?

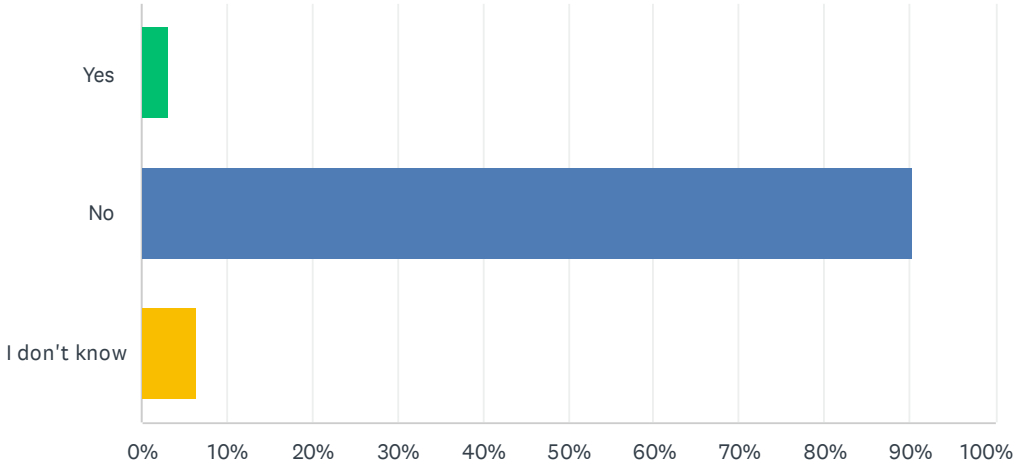
Answered: 24 Skipped: 39



ANSWER CHOICES	RESPONSES	
Yes	70.83%	17
No	29.17%	7
Other (please specify)	0.00%	0
TOTAL		24

Q14 Do you have flood insurance?

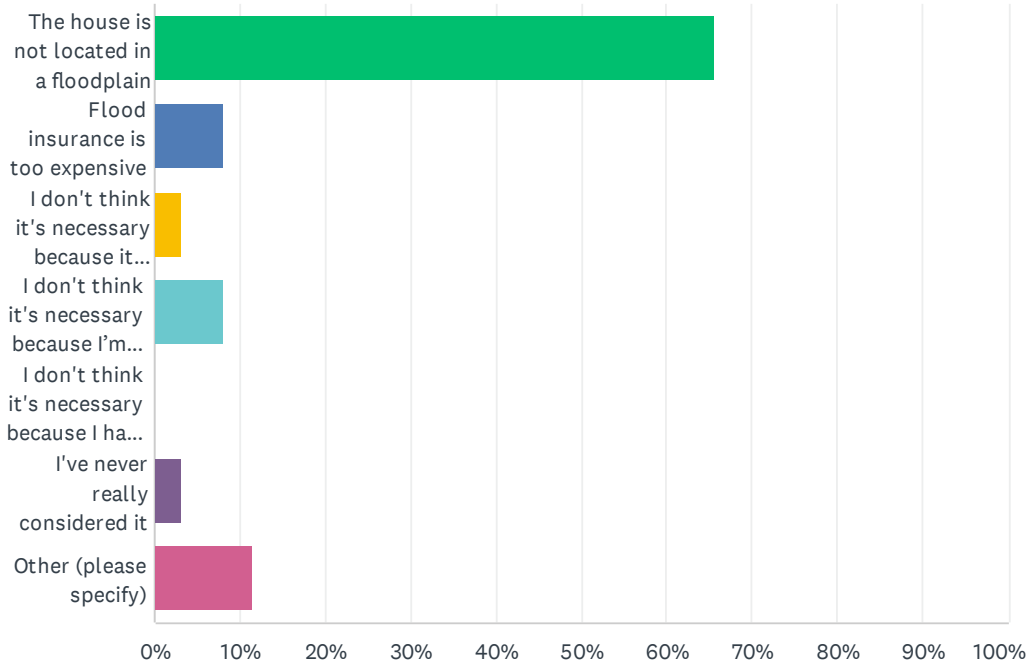
Answered: 63 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	3.17%	2
No	90.48%	57
I don't know	6.35%	4
TOTAL		63

Q15 If “No,” why not?

Answered: 61 Skipped: 2

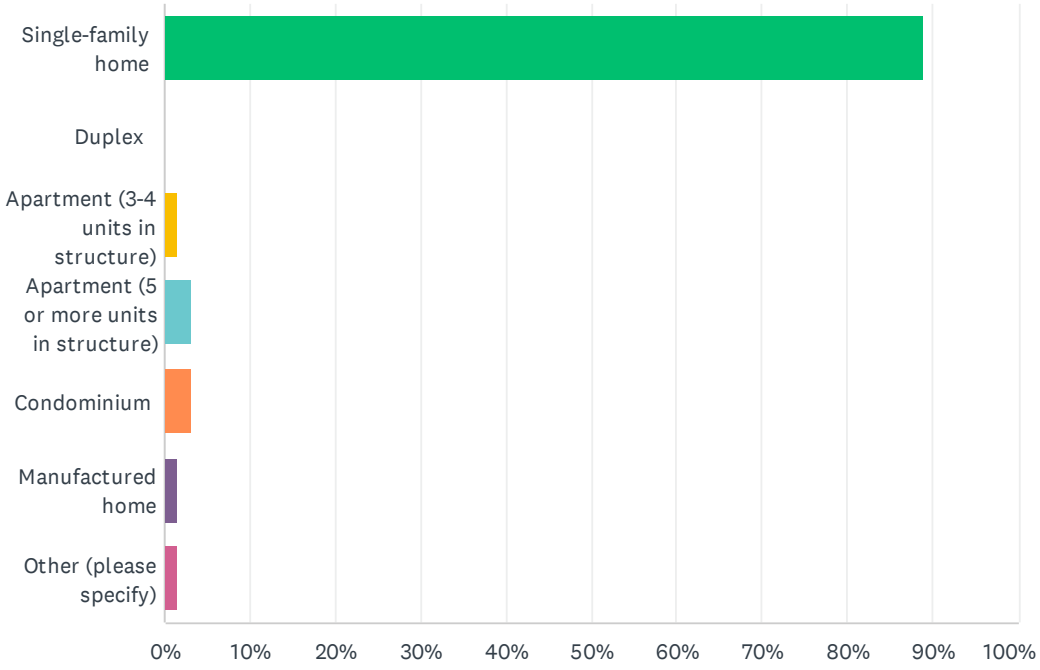


ANSWER CHOICES	RESPONSES	
The house is not located in a floodplain	65.57%	40
Flood insurance is too expensive	8.20%	5
I don't think it's necessary because it never floods	3.28%	2
I don't think it's necessary because I’m elevated or otherwise protected	8.20%	5
I don't think it's necessary because I have homeowners insurance	0.00%	0
I've never really considered it	3.28%	2
Other (please specify)	11.48%	7
TOTAL		61

591

Q16 What type of building do you live in?

Answered: 63 Skipped: 0



ANSWER CHOICES	RESPONSES	
Single-family home	88.89%	56
Duplex	0.00%	0
Apartment (3-4 units in structure)	1.59%	1
Apartment (5 or more units in structure)	3.17%	2
Condominium	3.17%	2
Manufactured home	1.59%	1
Other (please specify)	1.59%	1
TOTAL		63

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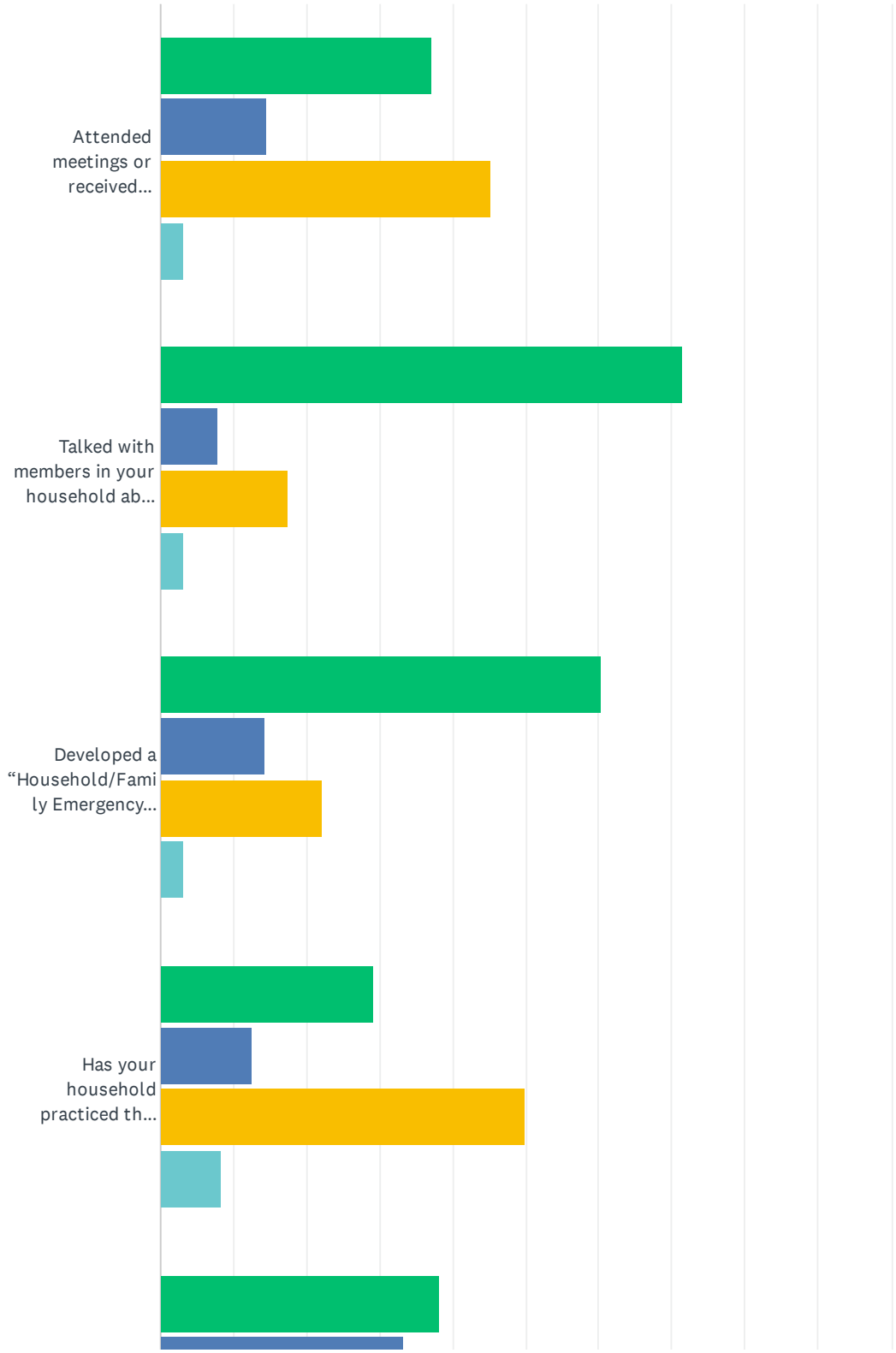
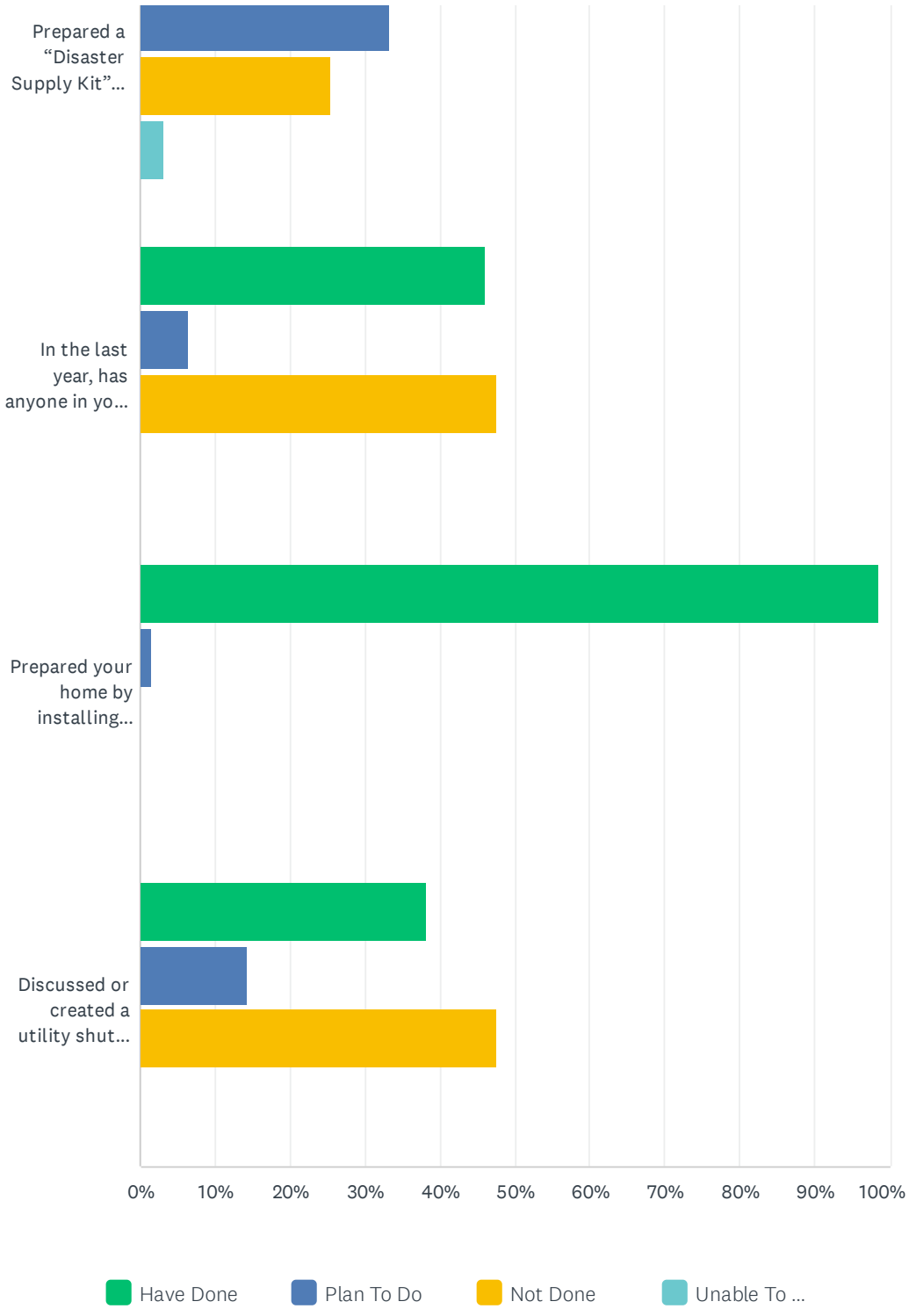
Q17 In the following list, please check the activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. (Please check one response for each preparedness activity.)

Answered: 63 Skipped: 0




Prepared a “Disaster Supply Kit”...
In the last year, has anyone in yo...
Prepared your home by installing...
Discussed or created a utility shut...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Have Done
Plan To Do
Not Done
Unable To ...

	HAVE DONE	PLAN TO DO	NOT DONE	UNABLE TO DO	TOTAL
Attended meetings or received written information on natural disasters or emergency preparedness?	37.10% 23	14.52% 9	45.16% 28	3.23% 2	62
Talked with members in your household about what to do in case of a natural disaster or emergency?	71.43% 45	7.94% 5	17.46% 11	3.17% 2	63
Developed a “Household/Family Emergency Plan” in order to decide what everyone would do in the event of a disaster?	60.32% 38	14.29% 9	22.22% 14	3.17% 2	63
Has your household practiced this plan?	29.17% 7	12.50% 3	50.00% 12	8.33% 2	24
Prepared a “Disaster Supply Kit” (stored extra food, water, batteries or other emergency supplies)?	38.10% 24	33.33% 21	25.40% 16	3.17% 2	63
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	46.03% 29	6.35% 4	47.62% 30	0.00% 0	63
Prepared your home by installing smoke and carbon monoxide alarms on each level of the home?	98.41% 62	1.59% 1	0.00% 0	0.00% 0	63
Discussed or created a utility shutoff procedure in the event of a natural disaster?	38.10% 24	14.29% 9	47.62% 30	0.00% 0	63

Q18 Additional Comments

Answered: 10 Skipped: 53

RESOLUTION
ADOPTING IREDELL ROWAN REGIONAL HAZARD MITIGATION PLAN

WHEREAS, the citizens and property within County/Town are subject to the effects of natural hazards that pose threats to lives and cause damage to property, and with the knowledge and experience that certain areas of the county are particularly vulnerable to drought, extreme heat, hailstorm, hurricane and tropical storm, lightning, thunderstorm wind/high wind, tornado, winter storm and freeze, flood, hazardous material incident, and wildfire; and

WHEREAS, the County desires to seek ways to mitigate the impact of identified hazard risks; and

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has enacted General Statute Section 166A-19.41 (*State emergency assistance funds*) which provides that for a state of emergency declared pursuant to G.S. 166A-19.20(a) after the deadline established by the Federal Emergency Management Agency pursuant to the Disaster Mitigation Act of 2002, P.L. 106-390, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act; and.

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local governments must develop an All-Hazards Mitigation Plan in order to be eligible to receive future Hazard Mitigation Grant Program Funds and other disaster-related assistance funding and that said Plan must be updated and adopted within a five year cycle; and

WHEREAS, the County/Town has performed a comprehensive review and evaluation of each section of the previously approved Hazard Mitigation Plan and has updated the said plan as required under regulations at 44 CFR Part 201 and according to guidance issued by the Federal Emergency Management Agency and the North Carolina Division of Emergency Management.

WHEREAS, it is the intent of the Board of Commissioners of County/Town to fulfill this obligation in order that the County will be eligible for federal and state assistance in the event that a state of disaster is declared for a hazard event affecting the County;

NOW, THEREFORE, be it resolved that the Board of Commissioners of XXXXXX hereby:

1. Adopts the Plan Name Regional Hazard Mitigation Plan.

2. Vests County/Town Agency Emergency Management with the responsibility, authority, and the means to:

   (a) Inform all concerned parties of this action.
   (b) Cooperate with Federal, State and local agencies and private firms which undertake to study, survey, map and identify floodplain areas, and cooperate with neighboring communities with respect to management of adjoining floodplain areas in order to prevent exacerbation of existing hazard impacts.

3. Appoints County/Town Emergency Management to assure that the Hazard Mitigation Plan is reviewed annually and every five years as specified in the Plan to assure that the Plan is in compliance with all State and Federal regulations and that any needed revisions or amendments to the Plan are developed and presented to the XXXXX County Board of Commissioners for consideration.

4. Agrees to take such other official action as may be reasonably necessary to carry out the objectives of the Hazard Mitigation Plan.

Adopted this the xxth day of xxxxx, xxxx.

_____
Name, Chair
_____ Board of Commissioners

Attest:

_____
Name, Clerk
_____ Board of Commissioners

Certified by: _____ (SEAL)

Date: _____

Table K- 1: Summary of drought impacts in the planning are y census tract from the NRI

County	Census Tract	Jurisdiction(s)	Total Drought Events	Drought Annual Frequency	Drought Expected Annual Loss	Drought EAL Score	Drought EAL Rating
Iredell	60100	Statesville	637	28.95	$0.00	0.00	Very Low
	60200		644	29.27	$341.47	80.63	Very High
	60300		637	28.95	$847.02	83.80	Very High
	60400		630	28.64	$1,498.59	85.80	Very High
	60500		630	28.64	$0.00	0.00	Very Low
	60601		637	28.95	$25.04	73.40	Relatively High
	60602		637	28.95	$1,192.01	84.95	Very High
	60603		651	29.59	$5,730.44	90.45	Very High
	60701		637	28.95	$11,580.49	92.76	Very High
	60702		609	27.68	$16,593.67	93.84	Very High
	60703		644	29.27	$9,664.51	92.18	Very High
	60801	Harmony	595	27.05	$45,560.59	96.54	Very High
	60802		609	27.68	$35,525.88	95.93	Very High
	60901	Love Valley	595	27.05	$25,387.30	95.01	Very High
	60902	Unincorporated	651	29.59	$37,298.80	96.07	Very High
	61001	Statesville	644	29.27	$9,136.86	91.97	Very High
	61002		658	29.91	$16,770.08	93.88	Very High
	61003		630	28.64	$2,558.05	87.67	Very High
	61101	Unincorporated	679	30.86	$16,155.35	93.77	Very High
	61102	Statesville	644	29.27	$12,876.13	93.06	Very High
	61103	Unincorporated	651	29.59	$3,308.06	88.52	Very High
	61104	Statesville	637	28.95	$3,670.24	88.87	Very High
	61201	Statesville, Troutman	651	29.59	$2,022.90	86.84	Very High
	61202	Troutman	651	29.59	$1,579.36	86.01	Very High
	61203	Mooresville	672	30.55	$188.59	78.69	Relatively High
	61204		672	30.55	$0.00	0.00	Very Low
	61205	Troutman	672	30.55	$437.31	81.49	Very High
	61301	Statesville	651	29.59	$7,243.62	91.23	Very High
	61302	Troutman	665	30.23	$6,752.75	91.01	Very High
	61303	Mooresville	672	30.55	$4,044.25	89.21	Very High
	61304		651	29.59	$1,271.70	85.20	Very High
	61401		679	30.86	$0.00	0.00	Very Low
	61402		672	30.55	$186.90	78.66	Relatively High
	61403		651	29.59	$0.00	0.00	Very Low
	61404		651	29.59	$108.64	76.95	Relatively High
	61405		651	29.59	$82.96	76.18	Relatively High
	61406		679	30.86	$165.51	78.24	Relatively High
	61407		658	29.91	$1,020.11	84.41	Very High
	61408		630	28.64	$2,482.89	87.55	Very High
	61501		630	28.64	$283.75	80.05	Very High
	61502		644	29.27	$1,339.00	85.38	Very High
	61503		644	29.27	$367.00	80.88	Very High
	61601		651	29.59	$0.00	0.00	Very Low
	61603		651	29.59	$0.00	0.00	Very Low
	61604		658	29.91	$0.00	0.00	Very Low
	61605		651	29.59	$0.00	0.00	Very Low
Rowan	50201	Faith, Granite Quarry, Salisbury	623	28.32	$2,889.50	88.07	Very High

County	Census Tract	Jurisdiction(s)	Total Drought Events	Drought Annual Frequency	Drought Expected Annual Loss	Drought EAL Score	Drought EAL Rating
	50202	Salisbury	623	28.32	$0.00	0.00	Very Low
	50300		637	28.95	$0.00	0.00	Very Low
	50400		637	28.95	$0.00	0.00	Very Low
	50500	Salisbury, Spencer	637	28.95	$0.00	0.00	Very Low
	50700	Spencer	623	28.32	$0.00	0.00	Very Low
	50800	East Spencer, Salisbury, Spencer	623	28.32	$2,736.58	87.90	Very High
	50901	East Spencer, Spencer	623	28.32	$16,734.81	93.88	Very High
	50903	Granite Quarry	609	27.68	$11,253.44	92.66	Very High
	50904	Unincorporated	581	26.41	$47,544.99	96.63	Very High
	51001	Rockwell	630	28.64	$24,105.66	94.86	Very High
	51002	Faith, Granite Quarry, Salisbury	623	28.32	$678.19	83.01	Very High
	51101		644	29.27	$10,417.79	92.42	Very High
	51102	Salisbury	658	29.91	$4,259.89	89.39	Very High
	51201		665	30.23	$11,233.24	92.65	Very High
	51202		644	29.27	$9,869.09	92.24	Very High
	51204		644	29.27	$376.82	80.98	Very High
	51301		651	29.59	$9,632.05	92.18	Very High
	51302	Salisbury, Spencer	644	29.27	$5,443.16	90.24	Very High
	51303	Salisbury	644	29.27	$3,426.30	88.64	Very High
	51400	Landis	658	29.91	$1,415.30	85.58	Very High
	51501	Unincorporated	658	29.91	$0.00	0.00	Very Low
	51502		665	30.23	$844.45	83.78	Very High
	51600	China Grove, Landis	665	30.23	$6,202.66	90.72	Very High
	51700		665	30.23	$14,473.77	93.44	Very High
	51801	Unincorporated	665	30.23	$35,394.95	95.92	Very High
	51802	China Grove	679	30.86	$119,156.03	98.20	Very High
	51901	Cleveland	693	31.50	$234,511.07	98.97	Very High
	51903	Unincorporated	665	30.23	$80,872.93	97.62	Very High
	51904	Cleveland	644	29.27	$94,460.25	97.87	Very High
	52000	East Spencer, Salisbury, Spencer	616	28.00	$0.00	0.00	Very Low
Planning Area Total			**49679**	**--**	**$1,033,230.76**	**--**	

Table K- 2: NRI extreme heat data by census tract

County	Census Tract	Jurisdiction(s)	Heat Wave EAL Total	Heat Wave Expected Annual Frequency	Heat Wave EAL Score	Heat Wave EAL Rating
Iredell	60100	Statesville	$6,239.12	0.06	45.33	Relatively Moderate
	60200		$2,193.91	0.06	30.46	Relatively Low
	60300		$2,786.55	0.06	33.36	Relatively Low
	60400		$4,272.62	0.06	39.59	Relatively Low
	60500		$4,574.86	0.06	40.58	Relatively Moderate
	60601		$6,746.04	0.06	46.64	Relatively Moderate

County	Census Tract	Jurisdiction(s)	Heat Wave EAL Total	Heat Wave Expected Annual Frequency	Heat Wave EAL Score	Heat Wave EAL Rating
	60602		$2,138.54	0.06	30.15	**Relatively Low**
	60603		$1,654.24	0.06	27.65	**Relatively Low**
	60701		$3,166.50	0.06	35.13	**Relatively Low**
	60702		$4,320.48	0.06	39.76	**Relatively Low**
	60703		$2,973.45	0.06	34.23	**Relatively Low**
	60801	Harmony	$3,690.78	0.06	37.36	**Relatively Low**
	60802		$3,800.43	0.06	37.78	**Relatively Low**
	60901	Love Valley	$3,463.35	0.06	36.40	**Relatively Low**
	60902	Unincorporated	$4,006.35	0.06	38.60	**Relatively Low**
	61001	Statesville	$4,262.85	0.06	39.57	**Relatively Low**
	61002		$4,261.06	0.06	39.56	**Relatively Low**
	61003		$4,056.20	0.06	38.81	**Relatively Low**
	61101	Unincorporated	$2,865.83	0.06	33.75	**Relatively Low**
	61102	Statesville	$3,505.96	0.06	36.59	**Relatively Low**
	61103	Unincorporated	$2,954.32	0.06	34.13	**Relatively Low**
	61104	Statesville	$2,309.86	0.06	31.02	**Relatively Low**
	61201	Statesville, Troutman	$5,460.14	0.06	43.27	**Relatively Moderate**
	61202	Troutman	$5,353.77	0.06	42.96	**Relatively Moderate**
	61203	Mooresville	$6,950.90	0.06	47.13	**Relatively Moderate**
	61204		$4,631.75	0.06	40.77	**Relatively Moderate**
	61205	Troutman	$4,100.29	0.06	38.96	**Relatively Low**
	61301	Statesville	$3,017.75	0.06	34.45	**Relatively Low**
	61302	Troutman	$5,266.62	0.06	42.70	**Relatively Moderate**
	61303	Mooresville	$5,690.42	0.06	43.88	**Relatively Moderate**
	61304		$6,092.91	0.06	44.95	**Relatively Moderate**
	61401		$5,502.59	0.06	43.38	**Relatively Moderate**
	61402		$7,732.35	0.06	49.02	**Relatively Moderate**
	61403		$4,029.56	0.06	38.71	**Relatively Low**
	61404		$3,295.48	0.06	35.67	**Relatively Low**
	61405		$3,822.30	0.06	37.87	**Relatively Low**
	61406		$5,365.36	0.06	43.00	**Relatively Moderate**
	61407		$4,745.76	0.06	41.13	**Relatively Moderate**
	61408		$5,670.97	0.06	43.83	**Relatively Moderate**
	61501		$5,147.47	0.06	42.32	**Relatively Moderate**
	61502		$5,262.17	0.06	42.68	**Relatively Moderate**
	61503		$5,184.63	0.06	42.44	**Relatively Moderate**
	61601		$3,588.13	0.06	36.91	**Relatively Low**
	61603		$5,737.76	0.06	44.02	**Relatively Moderate**
	61604		$1,534.26	0.06	26.97	**Relatively Low**
	61605		$3,202.21	0.06	35.27	**Relatively Low**
Rowan	50201	Faith, Granite Quarry, Salisbury	$1,775.24	0.06	28.32	**Relatively Low**
	50202	Salisbury	$2,307.46	0.06	31.00	**Relatively Low**
	50300		$1,546.47	0.06	27.05	**Relatively Low**
	50400		$1,349.17	0.06	25.89	**Relatively Low**
	50500	Salisbury, Spencer	$1,671.64	0.06	27.75	**Relatively Low**
	50700	Spencer	$1,383.19	0.06	26.07	**Relatively Low**
	50800	East Spencer, Salisbury, Spencer	$1,224.92	0.06	25.05	**Relatively Low**

County	Census Tract	Jurisdiction(s)	Heat Wave EAL Total	Heat Wave Expected Annual Frequency	Heat Wave EAL Score	Heat Wave EAL Rating
	50901	East Spencer, Spencer	$1,789.03	0.06	28.39	**Relatively Low**
	50903	Granite Quarry	$2,711.89	0.06	32.97	**Relatively Low**
	50904	Unincorporated	$1,112.94	0.06	24.26	**Relatively Low**
	51001	Rockwell	$3,308.38	0.06	35.72	**Relatively Low**
	51002	Faith, Granite Quarry, Salisbury	$2,553.19	0.06	32.21	**Relatively Low**
	51101		$2,992.70	0.06	34.32	**Relatively Low**
	51102	Salisbury	$1,645.71	0.06	27.59	**Relatively Low**
	51201		$2,937.09	0.06	34.07	**Relatively Low**
	51202		$1,667.56	0.06	27.72	**Relatively Low**
	51204		$1,824.73	0.06	28.57	**Relatively Low**
	51301		$1,214.64	0.06	24.98	**Relatively Low**
	51302	Salisbury, Spencer	$2,287.03	0.06	30.89	**Relatively Low**
	51303	Salisbury	$2,522.60	0.06	32.07	**Relatively Low**
	51400	Landis	$3,222.42	0.06	35.36	**Relatively Low**
	51501	Unincorporated	$1,814.89	0.06	28.51	**Relatively Low**
	51502		$1,345.88	0.06	25.86	**Relatively Low**
	51600	China Grove, Landis	$3,071.79	0.06	34.72	**Relatively Low**
	51700		$3,490.62	0.06	36.52	**Relatively Low**
	51801	Unincorporated	$1,958.12	0.06	29.23	**Relatively Low**
	51802	China Grove	$2,097.88	0.06	29.93	**Relatively Low**
	51901	Cleveland	$2,089.66	0.06	29.90	**Relatively Low**
	51903	Unincorporated	$1,450.91	0.06	26.51	**Relatively Low**
	51904	Cleveland	$1,381.94	0.06	26.06	**Relatively Low**
	52000	East Spencer, Salisbury, Spencer	$1,118.27	0.06	24.31	**Relatively Low**
Planning Area Total			$259,496.78	**--**		

Table K- 3: NRI hail data for the planning area based on census tract

County	Census Tract	Jurisdiction(s)	Expected Annual Hail Frequency	Hail EAL Total	Hail EAL Score	Drought EAL Rating
Iredell	60100	Statesville	5.53	$12,586.32	76.51	**Relatively High**
	60200		5.52	$4,472.70	64.51	**Relatively High**
	60300		5.52	$5,653.45	67.26	**Relatively High**
	60400		5.53	$8,806.31	72.43	**Relatively High**
	60500		5.53	$9,229.28	73.01	**Relatively High**
	60601		5.53	$13,683.67	77.42	**Relatively High**
	60602		5.53	$4,442.19	64.45	**Relatively High**
	60603		5.52	$4,035.47	63.31	**Relatively High**
	60701		5.52	$8,242.98	71.67	**Relatively High**
	60702		5.53	$10,966.40	74.99	**Relatively High**
	60703		5.53	$7,223.55	70.07	**Relatively High**
	60801	Harmony	5.53	$11,904.45	75.92	**Relatively High**
	60802		5.53	$11,741.46	75.76	**Relatively High**
	60901	Love Valley	5.53	$11,764.41	75.78	**Relatively High**
	60902	Unincorporated	5.53	$13,089.32	76.93	**Relatively High**

County	Census Tract	Jurisdiction(s)	Expected Annual Hail Frequency	Hail EAL Total	Hail EAL Score	Drought EAL Rating
Rowan	61001	Statesville	5.53	$9,672.66	73.58	Relatively High
	61002		5.53	$10,690.13	74.69	Relatively High
	61003		5.53	$8,883.90	72.54	Relatively High
	61101	Unincorporated	5.52	$7,650.26	70.76	Relatively High
	61102	Statesville	5.52	$8,584.13	72.13	Relatively High
	61103	Unincorporated	5.48	$6,607.81	69.07	Relatively High
	61104	Statesville	5.50	$5,440.41	66.80	Relatively High
	61201	Statesville, Troutman	5.48	$11,597.03	75.61	Relatively High
	61202	Troutman	5.48	$11,399.69	75.42	Relatively High
	61203	Mooresville	5.48	$14,126.63	77.78	Relatively High
	61204		5.48	$9,355.59	73.18	Relatively High
	61205	Troutman	5.48	$8,942.76	72.61	Relatively High
	61301	Statesville	5.48	$6,966.29	69.69	Relatively High
	61302	Troutman	5.48	$12,097.02	76.09	Relatively High
	61303	Mooresville	5.48	$12,255.92	76.24	Relatively High
	61304		5.48	$12,517.82	76.45	Relatively High
	61401		5.48	$11,039.84	75.07	Relatively High
	61402		5.48	$15,557.07	78.77	Relatively High
	61403		5.48	$8,117.08	71.50	Relatively High
	61404		5.48	$6,702.52	69.23	Relatively High
	61405		5.48	$7,691.17	70.82	Relatively High
	61406		5.48	$10,800.70	74.81	Relatively High
	61407		5.48	$9,951.06	73.90	Relatively High
	61408		5.48	$12,279.26	76.26	Relatively High
	61501		5.48	$10,337.91	74.30	Relatively High
	61502		5.48	$11,016.49	75.05	Relatively High
	61503		5.48	$10,462.92	74.44	Relatively High
	61601		5.48	$7,174.34	69.99	Relatively High
	61603		5.48	$11,504.87	75.52	Relatively High
	61604		5.48	$3,142.66	60.06	Relatively High
	61605		5.48	$6,514.55	68.91	Relatively High
	50201	Faith, Granite Quarry, Salisbury	4.91	$8,479.39	71.98	Relatively High
	50202	Salisbury	4.91	$11,373.45	75.40	Relatively High
	50300		4.91	$7,359.94	70.29	Relatively High
	50400		4.91	$6,514.91	68.91	Relatively High
	50500	Salisbury, Spencer	4.91	$8,499.35	72.02	Relatively High
	50700	Spencer	5.15	$6,827.06	69.45	Relatively High
	50800	East Spencer, Salisbury, Spencer	4.97	$5,933.72	67.85	Relatively High
	50901	East Spencer, Spencer	4.99	$9,619.69	73.51	Relatively High
	50903	Granite Quarry	4.91	$13,762.54	77.49	Relatively High
	50904	Unincorporated	4.91	$7,199.03	70.03	Relatively High
	51001	Rockwell	4.91	$16,713.29	79.51	Relatively High
	51002	Faith, Granite Quarry, Salisbury	4.91	$12,143.72	76.13	Relatively High
	51101		4.91	$14,753.08	78.20	Relatively High
	51102	Salisbury	4.91	$8,297.83	71.75	Relatively High
	51201		4.91	$14,066.35	77.73	Relatively High

County	Census Tract	Jurisdiction(s)	Expected Annual Hail Frequency	Hail EAL Total	Hail EAL Score	Drought EAL Rating
	51202		4.91	$8,299.71	71.76	**Relatively High**
	51204		4.91	$8,697.85	72.29	**Relatively High**
	51301		5.21	$6,412.82	68.70	**Relatively High**
	51302	Salisbury, Spencer	5.25	$11,816.97	75.83	**Relatively High**
	51303	Salisbury	5.00	$12,178.05	76.16	**Relatively High**
	51400	Landis	4.91	$15,214.24	78.53	**Relatively High**
	51501	Unincorporated	4.91	$8,392.89	71.86	**Relatively High**
	51502		5.05	$6,468.03	68.81	**Relatively High**
	51600	China Grove, Landis	4.91	$14,742.02	78.20	**Relatively High**
	51700		4.91	$17,019.73	79.73	**Relatively High**
	51801	Unincorporated	5.45	$11,824.90	75.84	**Relatively High**
	51802	China Grove	5.22	$14,258.42	77.89	**Relatively High**
	51901	Cleveland	5.35	$18,170.42	80.40	**Very High**
	51903	Unincorporated	5.32	$10,214.45	74.17	**Relatively High**
	51904	Cleveland	5.53	$11,190.90	75.21	**Relatively High**
	52000	East Spencer, Salisbury, Spencer	4.91	$5,587.86	67.13	**Relatively High**
Planning Area Total			--	**$768,955.06**	--	

Table K- 4: NRI Hurricane data by census tract

County	Census Tract	Jurisdiction(s)	Hurricane EAL Total	Hurricane Expected Annual Frequency	Hurricane EAL Score	Hurricane EAL Rating
Iredell	60100	Statesville	$54,501.19	0.06	55.44	**Relatively Moderate**
	60200		$17,469.14	0.06	44.72	**Relatively Moderate**
	60300		$23,080.13	0.06	47.28	**Relatively Moderate**
	60400		$60,832.09	0.06	56.61	**Relatively Moderate**
	60500		$44,716.09	0.06	53.38	**Relatively Moderate**
	60601		$50,859.97	0.06	54.68	**Relatively Moderate**
	60602		$20,408.11	0.06	46.18	**Relatively Moderate**
	60603		$44,973.65	0.06	53.43	**Relatively Moderate**
	60701		$29,164.10	0.06	49.43	**Relatively Moderate**
	60702		$37,945.67	0.06	51.82	**Relatively Moderate**
	60703		$46,283.06	0.06	53.73	**Relatively Moderate**
	60801	Harmony	$34,491.24	0.06	50.95	**Relatively Moderate**
	60802		$32,886.72	0.06	50.51	**Relatively Moderate**
	60901	Love Valley	$39,668.85	0.06	52.23	**Relatively Moderate**
	60902	Unincorporated	$38,137.41	0.06	51.87	**Relatively Moderate**
	61001	Statesville	$38,109.22	0.06	51.86	**Relatively Moderate**
	61002		$36,837.68	0.06	51.53	**Relatively Moderate**
	61003		$41,941.88	0.06	52.75	**Relatively Moderate**
	61101	Unincorporated	$24,072.11	0.06	47.64	**Relatively Moderate**
	61102	Statesville	$33,079.12	0.06	50.57	**Relatively Moderate**
	61103	Unincorporated	$23,580.82	0.08	47.48	**Relatively Moderate**
	61104	Statesville	$24,342.75	0.07	47.75	**Relatively Moderate**

County	Census Tract	Jurisdiction(s)	Hurricane EAL Total	Hurricane Expected Annual Frequency	Hurricane EAL Score	Hurricane EAL Rating
	61201	Statesville, Troutman	$66,638.49	0.08	57.64	Relatively Moderate
	61202	Troutman	$69,385.97	0.08	58.13	Relatively Moderate
	61203	Mooresville	$87,051.33	0.08	61.10	Relatively High
	61204		$93,881.45	0.08	62.12	Relatively High
	61205	Troutman	$65,103.80	0.08	57.38	Relatively Moderate
	61301	Statesville	$20,779.55	0.08	46.38	Relatively Moderate
	61302	Troutman	$43,924.27	0.08	53.20	Relatively Moderate
	61303	Mooresville	$113,635.44	0.08	64.91	Relatively High
	61304		$88,883.21	0.08	61.35	Relatively High
	61401		$98,725.84	0.08	62.80	Relatively High
	61402		$117,516.39	0.08	65.39	Relatively High
	61403		$80,484.40	0.08	60.03	Relatively High
	61404		$71,007.55	0.08	58.42	Relatively Moderate
	61405		$57,866.53	0.08	56.10	Relatively Moderate
	61406		$124,860.25	0.08	66.30	Relatively High
	61407		$61,043.72	0.08	56.65	Relatively Moderate
	61408		$63,542.15	0.08	57.12	Relatively Moderate
	61501		$44,857.95	0.08	53.40	Relatively Moderate
	61502		$60,162.42	0.08	56.50	Relatively Moderate
	61503		$56,078.85	0.08	55.73	Relatively Moderate
	61601		$56,213.63	0.08	55.76	Relatively Moderate
	61603		$55,474.14	0.08	55.64	Relatively Moderate
	61604		$15,175.19	0.08	43.45	Relatively Moderate
	61605		$31,976.45	0.08	50.24	Relatively Moderate
Rowan	50201	Faith, Granite Quarry, Salisbury	$50,565.09	0.09	54.61	Relatively Moderate
	50202	Salisbury	$114,244.14	0.09	64.99	Relatively High
	50300		$51,840.34	0.09	54.90	Relatively Moderate
	50400		$54,522.22	0.09	55.44	Relatively Moderate
	50500	Salisbury, Spencer	$110,627.98	0.09	64.52	Relatively High
	50700	Spencer	$53,129.80	0.09	55.17	Relatively Moderate
	50800	East Spencer, Salisbury, Spencer	$35,725.36	0.09	51.27	Relatively Moderate
	50901	East Spencer, Spencer	$65,333.17	0.09	57.41	Relatively Moderate
	50903	Granite Quarry	$70,557.44	0.09	58.34	Relatively Moderate
	50904	Unincorporated	$37,383.48	0.09	51.66	Relatively Moderate
	51001	Rockwell	$97,361.60	0.09	62.64	Relatively High
	51002	Faith, Granite Quarry, Salisbury	$72,270.09	0.09	58.65	Relatively Moderate
	51101		$69,728.67	0.09	58.19	Relatively Moderate
	51102	Salisbury	$71,119.81	0.09	58.45	Relatively Moderate
	51201		$66,391.74	0.09	57.58	Relatively Moderate
	51202		$51,355.52	0.09	54.79	Relatively Moderate
	51204		$57,608.53	0.09	56.05	Relatively Moderate
	51301		$27,419.37	0.09	48.84	Relatively Moderate

County	Census Tract	Jurisdiction(s)	Hurricane EAL Total	Hurricane Expected Annual Frequency	Hurricane EAL Score	Hurricane EAL Rating
	51302	Salisbury, Spencer	$59,131.52	0.09	56.33	Relatively Moderate
	51303	Salisbury	$79,617.83	0.09	59.89	Relatively Moderate
	51400	Landis	$74,018.06	0.09	58.95	Relatively Moderate
	51501	Unincorporated	$35,944.49	0.09	51.34	Relatively Moderate
	51502		$30,001.87	0.09	49.66	Relatively Moderate
	51600	China Grove, Landis	$89,826.05	0.09	61.52	Relatively High
	51700		$93,338.08	0.09	62.04	Relatively High
	51801	Unincorporated	$61,208.85	0.08	56.67	Relatively Moderate
	51802	China Grove	$81,278.53	0.08	60.18	Relatively High
	51901	Cleveland	$86,848.49	0.08	61.07	Relatively High
	51903	Unincorporated	$40,351.03	0.08	52.38	Relatively Moderate
	51904	Cleveland	$44,111.50	0.06	53.25	Relatively Moderate
	52000	East Spencer, Salisbury, Spencer	$64,447.22	0.09	57.27	Relatively Moderate
Planning Area Total			$4,438,957.85	--		

Table K- 5: NRI lightning data by census tract

County	Census Tract	Jurisdiction(s)	Lightning EAL Total	Lightning Expected Annual Frequency	Lightning EAL Score	Lightning EAL Rating	Lightning Risk Score	Lightning Risk Score Rating
Iredell	60100	Statesville	$17,074.92	56.98	82.84	Very High	87.76	Very High
	60200		$6,647.13	66.26	54.80	Relatively Moderate	66.27	Relatively High
	60300		$7,837.96	59.37	59.84	Relatively Moderate	72.94	Relatively High
	60400		$13,761.74	58.90	77.11	Relatively High	84.79	Very High
	60500		$12,783.33	55.66	74.89	Relatively High	79.71	Relatively High
	60601		$18,032.95	58.40	84.19	Very High	89.31	Very High
	60602		$6,896.01	66.11	55.92	Relatively Moderate	48.00	Relatively Moderate
	60603		$7,735.66	68.19	59.41	Relatively Moderate	70.85	Relatively High
	60701		$9,800.28	65.13	66.83	Relatively High	69.29	Relatively High
	60702		$12,968.25	63.60	75.35	Relatively High	76.91	Relatively High
	60703		$10,069.43	61.36	67.67	Relatively High	69.53	Relatively High
	60801	Harmony	$10,077.59	58.29	67.71	Relatively High	66.24	Relatively High
	60802		$9,695.94	55.32	66.49	Relatively High	64.45	Relatively High

County	Census Tract	Jurisdiction(s)	Lightning EAL Total	Lightning Expected Annual Frequency	Lightning EAL Score	Lightning EAL Rating	Lightning Risk Score	Lightning Risk Score Rating
	60901	Love Valley	$9,827.24	56.81	66.90	Relatively High	70.78	Relatively High
	60902	Unincorporated	$11,859.28	62.75	72.69	Relatively High	71.43	Relatively High
	61001	Statesville	$12,117.19	60.31	73.33	Relatively High	75.44	Relatively High
	61002		$11,972.67	60.09	72.97	Relatively High	71.12	Relatively High
	61003		$11,101.98	56.28	70.75	Relatively High	77.20	Relatively High
	61101	Unincorporated	$8,554.78	65.65	62.61	Relatively High	58.33	Relatively Moderate
	61102	Statesville	$10,273.63	61.55	68.34	Relatively High	70.99	Relatively High
	61103	Unincorporated	$8,602.12	65.96	62.81	Relatively High	62.70	Relatively High
	61104	Statesville	$6,820.13	62.14	55.59	Relatively Moderate	54.29	Relatively Moderate
	61201	Statesville, Troutman	$17,256.34	64.80	83.08	Very High	80.30	Very High
	61202	Troutman	$18,015.75	69.25	84.17	Very High	82.58	Very High
	61203	Mooresville	$21,487.09	64.38	88.19	Very High	88.19	Very High
	61204		$16,482.42	64.66	81.97	Very High	66.88	Relatively High
	61205	Troutman	$13,135.38	63.11	75.74	Relatively High	70.93	Relatively High
	61301	Statesville	$8,293.82	64.08	61.60	Relatively High	62.90	Relatively High
	61302	Troutman	$15,630.66	65.63	80.56	Very High	76.89	Relatively High
	61303	Mooresville	$19,953.49	64.41	86.58	Very High	77.78	Relatively High
	61304		$19,714.90	65.43	86.30	Very High	85.77	Very High
	61401		$18,988.92	65.42	85.40	Very High	69.21	Relatively High
	61402		$25,031.00	64.66	91.07	Very High	88.55	Very High
	61403		$13,361.58	60.57	76.24	Relatively High	73.94	Relatively High
	61404		$12,073.57	65.54	73.22	Relatively High	66.03	Relatively High
	61405		$12,781.13	66.33	74.89	Relatively High	60.35	Relatively High
	61406		$20,822.84	66.79	87.48	Very High	73.61	Relatively High
	61407		$15,636.25	68.02	80.57	Very High	78.06	Relatively High
	61408		$16,198.67	61.92	81.51	Very High	68.05	Relatively High
	61501		$14,728.86	63.44	79.01	Relatively High	79.27	Relatively High

County	Census Tract	Jurisdiction(s)	Lightning EAL Total	Lightning Expected Annual Frequency	Lightning EAL Score	Lightning EAL Rating	Lightning Risk Score	Lightning Risk Score Rating
	61502		$15,944.37	62.79	81.09	Very High	78.17	Relatively High
	61503		$15,201.10	62.12	79.84	Relatively High	76.24	Relatively High
	61601		$11,727.49	63.91	72.38	Relatively High	81.03	Very High
	61603		$16,921.63	63.49	82.63	Very High	84.91	Very High
	61604		$4,294.16	60.67	42.71	Relatively Moderate	38.71	Relatively Low
	61605		$9,225.49	61.63	64.95	Relatively High	52.36	Relatively Moderate
Rowan	50201	Faith, Granite Quarry, Salisbury	$2,625.43	60.18	31.49	Relatively Low	38.03	Relatively Low
	50202	Salisbury	$4,244.92	55.71	42.44	Relatively Moderate	55.06	Relatively Moderate
	50300		$2,318.54	55.30	29.09	Relatively Low	36.79	Relatively Low
	50400		$2,207.16	54.60	28.22	Relatively Low	37.02	Relatively Low
	50500	Salisbury, Spencer	$3,655.04	55.54	38.72	Relatively Low	37.94	Relatively Low
	50700	Spencer	$2,415.44	60.34	29.90	Relatively Low	36.68	Relatively Low
	50800	East Spencer, Salisbury, Spencer	$1,833.81	59.43	25.02	Relatively Low	31.60	Relatively Low
	50901	East Spencer, Spencer	$2,974.15	59.22	34.10	Relatively Low	37.85	Relatively Low
	50903	Granite Quarry	$3,759.98	55.95	39.43	Relatively Low	39.01	Relatively Low
	50904	Unincorporated	$1,562.40	56.33	22.59	Relatively Low	21.25	Relatively Low
	51001	Rockwell	$4,722.37	56.29	45.16	Relatively Moderate	52.92	Relatively Moderate
	51002	Faith, Granite Quarry, Salisbury	$4,434.93	68.80	43.54	Relatively Moderate	45.74	Relatively Moderate
	51101		$4,584.80	66.14	44.37	Relatively Moderate	43.03	Relatively Moderate
	51102	Salisbury	$3,159.01	62.05	35.44	Relatively Low	38.43	Relatively Low
	51201		$3,804.46	56.96	39.71	Relatively Low	44.62	Relatively Moderate
	51202		$2,248.26	52.30	28.56	Relatively Low	33.30	Relatively Low
	51204		$2,484.30	51.60	30.44	Relatively Low	38.56	Relatively Low
	51301		$1,528.18	56.33	22.28	Relatively Low	24.23	Relatively Low
	51302	Salisbury, Spencer	$3,023.07	54.31	34.43	Relatively Low	34.17	Relatively Low

County	Census Tract	Jurisdiction(s)	Lightning EAL Total	Lightning Expected Annual Frequency	Lightning EAL Score	Lightning EAL Rating	Lightning Risk Score	Lightning Risk Score Rating
	51303	Salisbury	$3,492.44	53.45	37.64	Relatively Low	46.16	Relatively Moderate
	51400	Landis	$5,158.29	69.51	47.49	Relatively Moderate	57.04	Relatively Moderate
	51501	Unincorporated	$2,553.02	63.23	30.94	Relatively Low	40.37	Relatively Moderate
	51502		$1,944.67	63.45	25.96	Relatively Low	27.99	Relatively Low
	51600	China Grove, Landis	$5,189.68	66.54	47.67	Relatively Moderate	56.70	Relatively Moderate
	51700		$5,822.80	68.04	50.93	Relatively Moderate	58.89	Relatively Moderate
	51801	Unincorporated	$3,262.13	62.88	36.14	Relatively Low	41.02	Relatively Moderate
	51802	China Grove	$3,755.91	63.25	39.39	Relatively Low	41.27	Relatively Moderate
	51901	Cleveland	$3,633.34	63.34	38.57	Relatively Low	36.72	Relatively Low
	51903	Unincorporated	$2,174.79	62.35	27.97	Relatively Low	33.17	Relatively Low
	51904	Cleveland	$2,554.47	64.08	30.96	Relatively Low	33.80	Relatively Low
	52000	East Spencer, Salisbury, Spencer	$2,248.13	55.75	28.56	Relatively Low	36.84	Relatively Low
Planning Area Total			$706,793.02	--				

Table K- 6: NRI strong wind data for the planning area by census tract

County	Census Tract	Jurisdiction(s)	Strong Wind EAL Total	Strong Wind Expected Annual Frequency	Strong Wind EAL Score	Strong Wind EAL Rating
Iredell	60100	Statesville	$48,143.95	2.52	85.43	Very High
	60200		$16,720.36	2.51	63.42	Relatively High
	60300		$21,222.34	2.51	69.04	Relatively High
	60400		$36,341.25	2.52	80.54	Very High
	60500		$35,955.28	2.52	80.35	Very High
	60601		$51,001.78	2.52	86.31	Very High
	60602		$16,835.05	2.52	63.57	Relatively High
	60603		$17,254.72	2.51	64.16	Relatively High
	60701		$25,772.61	2.51	73.36	Relatively High
	60702		$35,048.50	2.52	79.87	Relatively High
	60703		$26,652.01	2.52	74.14	Relatively High
	60801	Harmony	$32,120.92	2.52	78.13	Relatively High
	60802		$32,327.70	2.52	78.23	Relatively High
	60901	Love Valley	$31,589.17	2.52	77.79	Relatively High
	60902	Unincorporated	$35,087.97	2.52	79.89	Relatively High
	61001	Statesville	$33,829.14	2.52	79.14	Relatively High

County	Census Tract	Jurisdiction(s)	Strong Wind EAL Total	Strong Wind Expected Annual Frequency	Strong Wind EAL Score	Strong Wind EAL Rating
Rowan	61002		$34,392.14	2.52	79.46	Relatively High
	61003		$32,718.28	2.52	78.47	Relatively High
	61101	Unincorporated	$22,936.54	2.51	70.77	Relatively High
	61102	Statesville	$28,247.25	2.51	75.37	Relatively High
	61103	Unincorporated	$21,698.80	2.47	69.52	Relatively High
	61104	Statesville	$18,140.36	2.49	65.39	Relatively High
	61201	Statesville, Troutman	$41,855.05	2.47	83.12	Very High
	61202	Troutman	$41,446.37	2.47	82.93	Very High
	61203	Mooresville	$53,019.30	2.47	86.88	Very High
	61204		$38,744.78	2.47	81.74	Very High
	61205	Troutman	$33,052.70	2.47	78.68	Relatively High
	61301	Statesville	$21,995.35	2.47	69.83	Relatively High
	61302	Troutman	$39,079.99	2.47	81.90	Very High
	61303	Mooresville	$48,006.09	2.47	85.39	Very High
	61304		$47,787.05	2.47	85.32	Very High
	61401		$44,739.61	2.47	84.27	Very High
	61402		$60,856.37	2.47	88.83	Very High
	61403		$33,576.21	2.47	78.99	Relatively High
	61404		$28,006.86	2.47	75.20	Relatively High
	61405		$30,061.87	2.47	76.76	Relatively High
	61406		$46,407.09	2.47	84.86	Very High
	61407		$36,580.84	2.47	80.67	Very High
	61408		$43,093.60	2.47	83.65	Very High
	61501		$37,281.91	2.47	81.02	Very High
	61502		$39,826.44	2.47	82.24	Very High
	61503		$38,638.64	2.47	81.68	Very High
	61601		$28,368.76	2.47	75.46	Relatively High
	61603		$42,070.86	2.47	83.22	Very High
	61604		$11,331.62	2.47	54.50	Relatively Moderate
	61605		$23,646.91	2.47	71.46	Relatively High
	50201	Faith, Granite Quarry, Salisbury	$19,593.21	2.30	67.14	Relatively High
	50202	Salisbury	$30,005.72	2.30	76.71	Relatively High
	50300		$17,735.67	2.30	64.86	Relatively High
	50400		$16,362.00	2.30	62.89	Relatively High
	50500	Salisbury, Spencer	$24,386.55	2.30	72.15	Relatively High
	50700	Spencer	$16,928.41	2.41	63.71	Relatively High
	50800	East Spencer, Salisbury, Spencer	$13,703.66	2.33	58.75	Relatively Moderate
	50901	East Spencer, Spencer	$22,032.68	2.33	69.86	Relatively High
	50903	Granite Quarry	$29,938.25	2.30	76.65	Relatively High
	50904	Unincorporated	$14,173.73	2.30	59.55	Relatively Moderate
	51001	Rockwell	$37,462.11	2.30	81.12	Very High
	51002	Faith, Granite Quarry, Salisbury	$28,101.38	2.30	75.27	Relatively High
	51101		$32,000.34	2.30	78.06	Relatively High
	51102	Salisbury	$20,624.07	2.30	68.37	Relatively High
	51201		$30,921.36	2.30	77.37	Relatively High
	51202		$18,991.79	2.30	66.46	Relatively High

County	Census Tract	Jurisdiction(s)	Strong Wind EAL Total	Strong Wind Expected Annual Frequency	Strong Wind EAL Score	Strong Wind EAL Rating
	51204		$20,623.02	2.30	68.36	Relatively High
	51301		$13,638.20	2.43	58.63	Relatively Moderate
	51302	Salisbury, Spencer	$26,328.10	2.45	73.85	Relatively High
	51303	Salisbury	$28,737.43	2.34	75.76	Relatively High
	51400	Landis	$33,867.80	2.30	79.16	Relatively High
	51501	Unincorporated	$18,438.37	2.30	65.76	Relatively High
	51502		$14,262.91	2.34	59.70	Relatively Moderate
	51600	China Grove, Landis	$34,160.10	2.30	79.32	Relatively High
	51700		$38,244.83	2.30	81.51	Very High
	51801	Unincorporated	$25,128.33	2.46	72.83	Relatively High
	51802	China Grove	$28,955.79	2.39	75.91	Relatively High
	51901	Cleveland	$32,400.37	2.43	78.28	Relatively High
	51903	Unincorporated	$19,381.48	2.47	66.93	Relatively High
	51904	Cleveland	$21,556.36	2.52	69.38	Relatively High
	52000	East Spencer, Salisbury, Spencer	$15,398.55	2.30	61.48	Relatively High
Planning Area Total			$2,307,592.95			

Table K- 7: NRI tornado data by census tract

County	Census Tract	Jurisdiction(s)	Tornado Expected Annual Frequency	Tornado EAL Total	Tornado EAL Score	Tornado EAL Rating	Tornado Risk Score	Tornado Risk Score Rating
Iredell	60100	Statesville	0.00	$142,129.44	69.84	Relatively High	76.29	Relatively High
	60200		0.00	$47,143.13	48.21	Relatively Moderate	54.52	Relatively Moderate
	60300		0.00	$62,544.52	53.33	Relatively Moderate	61.28	Relatively High
	60400		0.00	$135,682.75	68.74	Relatively High	77.06	Relatively High
	60500		0.00	$112,043.94	64.55	Relatively High	68.74	Relatively High
	60601		0.00	$140,233.24	69.51	Relatively High	76.65	Relatively High
	60602		0.00	$51,325.15	49.69	Relatively Moderate	43.57	Relatively Moderate
	60603		0.00	$87,376.28	59.57	Relatively Moderate	66.87	Relatively High
	60701		0.01	$72,959.05	56.14	Relatively Moderate	57.42	Relatively Moderate
	60702		0.01	$94,310.26	61.11	Relatively High	62.34	Relatively High
	60703		0.01	$98,889.01	62.04	Relatively High	62.94	Relatively High

County	Census Tract	Jurisdiction(s)	Tornado Expected Annual Frequency	Tornado EAL Total	Tornado EAL Score	Tornado EAL Rating	Tornado Risk Score	Tornado Risk Score Rating
	60801	Harmony	0.02	$78,914.53	57.59	Relatively Moderate	56.35	Relatively Moderate
	60802		0.02	$77,978.59	57.37	Relatively Moderate	55.72	Relatively Moderate
	60901	Love Valley	0.02	$84,909.37	59.01	Relatively Moderate	61.26	Relatively High
	60902	Unincorporated	0.02	$86,476.62	59.37	Relatively Moderate	58.37	Relatively Moderate
	61001	Statesville	0.01	$96,591.59	61.55	Relatively High	63.03	Relatively High
	61002		0.01	$92,281.64	60.71	Relatively High	59.26	Relatively Moderate
	61003		0.00	$101,746.85	62.58	Relatively High	67.45	Relatively High
	61101	Unincorporated	0.01	$61,641.64	53.07	Relatively Moderate	49.74	Relatively Moderate
	61102	Statesville	0.01	$82,366.36	58.42	Relatively Moderate	59.93	Relatively Moderate
	61103	Unincorporated	0.01	$71,334.64	55.76	Relatively Moderate	55.21	Relatively Moderate
	61104	Statesville	0.00	$62,970.70	53.46	Relatively Moderate	51.82	Relatively Moderate
	61201	Statesville, Troutman	0.01	$169,361.46	74.19	Relatively High	72.24	Relatively High
	61202	Troutman	0.01	$172,211.08	74.60	Relatively High	73.88	Relatively High
	61203	Mooresville	0.00	$220,648.11	81.24	Very High	82.15	Very High
	61204		0.00	$202,958.91	78.92	Relatively High	65.78	Relatively High
	61205	Troutman	0.01	$149,938.49	71.15	Relatively High	67.15	Relatively High
	61301	Statesville	0.01	$67,145.38	54.64	Relatively Moderate	54.88	Relatively Moderate
	61302	Troutman	0.01	$129,224.53	67.64	Relatively High	64.94	Relatively High
	61303	Mooresville	0.01	$244,773.73	84.04	Very High	75.19	Relatively High
	61304		0.00	$212,609.85	80.19	Very High	80.42	Very High
	61401		0.00	$221,405.90	81.34	Very High	66.35	Relatively High
	61402		0.00	$278,024.34	87.33	Very High	84.56	Very High
	61403		0.00	$174,778.02	74.98	Relatively High	73.23	Relatively High
	61404		0.00	$150,829.47	71.29	Relatively High	65.44	Relatively High
	61405		0.00	$137,159.70	68.99	Relatively High	58.58	Relatively Moderate
	61406		0.00	$260,765.83	85.74	Very High	71.87	Relatively High
	61407		0.00	$152,337.80	71.55	Relatively High	69.79	Relatively High

County	Census Tract	Jurisdiction(s)	Tornado Expected Annual Frequency	Tornado EAL Total	Tornado EAL Score	Tornado EAL Rating	Tornado Risk Score	Tornado Risk Score Rating
	61408		0.01	$166,388.85	73.75	Relatively High	62.83	Relatively High
	61501		0.00	$133,264.40	68.34	Relatively High	69.14	Relatively High
	61502		0.00	$157,321.50	72.34	Relatively High	70.19	Relatively High
	61503		0.00	$151,013.93	71.32	Relatively High	68.47	Relatively High
	61601		0.00	$131,747.40	68.08	Relatively High	76.31	Relatively High
	61603		0.00	$157,081.09	72.31	Relatively High	75.63	Relatively High
	61604		0.00	$42,357.32	46.26	Relatively Moderate	42.23	Relatively Moderate
	61605		0.00	$88,996.90	59.94	Relatively Moderate	51.43	Relatively Moderate
Rowan	50201	Faith, Granite Quarry, Salisbury	0.00	$129,929.38	67.79	Relatively High	74.31	Relatively High
	50202	Salisbury	0.00	$236,684.04	83.15	Very High	91.90	Very High
	50300		0.00	$124,346.29	66.79	Relatively High	74.92	Relatively High
	50400		0.00	$121,384.96	66.29	Relatively High	75.80	Relatively High
	50500	Salisbury, Spencer	0.00	$210,213.92	79.87	Relatively High	78.04	Relatively High
	50700	Spencer	0.00	$106,247.04	63.45	Relatively High	69.87	Relatively High
	50800	East Spencer, Salisbury, Spencer	0.00	$88,031.68	59.73	Relatively Moderate	66.51	Relatively High
	50901	East Spencer, Spencer	0.01	$137,782.38	69.08	Relatively High	72.52	Relatively High
	50903	Granite Quarry	0.01	$186,333.50	76.65	Relatively High	75.38	Relatively High
	50904	Unincorporated	0.02	$83,379.73	58.66	Relatively Moderate	56.82	Relatively Moderate
	51001	Rockwell	0.01	$243,611.57	83.93	Very High	89.01	Very High
	51002	Faith, Granite Quarry, Salisbury	0.00	$186,402.07	76.66	Relatively High	77.91	Relatively High
	51101		0.01	$195,499.29	77.92	Relatively High	75.63	Relatively High
	51102	Salisbury	0.01	$153,471.00	71.71	Relatively High	74.27	Relatively High
	51201		0.00	$190,299.82	77.26	Relatively High	81.19	Very High
	51202		0.01	$126,434.18	67.13	Relatively High	72.26	Relatively High
	51204		0.00	$141,616.36	69.77	Relatively High	78.44	Relatively High

County	Census Tract	Jurisdiction(s)	Tornado Expected Annual Frequency	Tornado EAL Total	Tornado EAL Score	Tornado EAL Rating	Tornado Risk Score	Tornado Risk Score Rating
	51301		0.01	$59,797.13	52.50	Relatively Moderate	54.72	Relatively Moderate
	51302	Salisbury, Spencer	0.01	$114,854.93	65.07	Relatively High	64.05	Relatively High
	51303	Salisbury	0.00	$190,078.83	77.22	Relatively High	84.75	Very High
	51400	Landis	0.01	$211,177.37	79.98	Relatively High	87.03	Very High
	51501	Unincorporated	0.00	$111,351.74	64.43	Relatively High	73.55	Relatively High
	51502		0.00	$86,155.42	59.30	Relatively Moderate	61.14	Relatively High
	51600	China Grove, Landis	0.00	$227,922.31	82.12	Very High	88.34	Very High
	51700		0.01	$245,686.65	84.13	Very High	89.03	Very High
	51801	Unincorporated	0.01	$139,913.02	69.45	Relatively High	73.79	Relatively High
	51802	China Grove	0.02	$169,577.86	74.22	Relatively High	75.31	Relatively High
	51901	Cleveland	0.03	$164,917.53	73.54	Relatively High	70.72	Relatively High
	51903	Unincorporated	0.01	$67,593.57	54.74	Relatively Moderate	59.14	Relatively Moderate
	51904	Cleveland	0.02	$84,752.44	58.97	Relatively Moderate	61.04	Relatively High
	52000	East Spencer, Salisbury, Spencer	0.00	$127,361.54	67.29	Relatively High	76.35	Relatively High
Planning Area Total				$10,577,000.83	--			

Table K- 8: NRI ice storm data based on census tracts

County	Census Tract	Jurisdiction(s)	Ice Storm EAL Total	Ice Storm Expected Annual Frequency	Ice Storm EAL Score	Ice Storm EAL Rating
Iredell	60100	Statesville	$64,785.31	1.71	96.44	Very High
	60200		$20,783.88	1.72	87.28	Very High
	60300		$26,820.28	1.72	89.74	Very High
	60400		$70,019.60	1.71	96.82	Very High
	60500		$52,741.13	1.71	95.30	Very High
	60601		$61,050.96	1.71	96.12	Very High
	60602		$23,933.52	1.71	88.65	Very High
	60603		$48,454.14	1.72	94.76	Very High
	60701		$30,633.40	1.72	91.03	Very High
	60702		$42,001.27	1.71	93.72	Very High
	60703		$51,579.08	1.71	95.17	Very High
	60801	Harmony	$34,690.21	1.71	92.14	Very High

County	Census Tract	Jurisdiction(s)	Ice Storm EAL Total	Ice Storm Expected Annual Frequency	Ice Storm EAL Score	Ice Storm EAL Rating
	60802		$33,531.37	1.71	91.82	Very High
	60901	Love Valley	$39,788.09	1.71	93.30	Very High
	60902	Unincorporated	$38,195.65	1.71	92.96	Very High
	61001	Statesville	$43,860.57	1.71	94.04	Very High
	61002		$40,949.60	1.71	93.52	Very High
	61003		$48,330.54	1.71	94.74	Very High
	61101	Unincorporated	$23,421.45	1.72	88.42	Very High
	61102	Statesville	$35,452.57	1.72	92.34	Very High
	61103	Unincorporated	$20,241.88	1.74	87.00	Very High
	61104	Statesville	$22,689.23	1.73	88.12	Very High
	61201	Statesville, Troutman	$56,638.59	1.74	95.69	Very High
	61202	Troutman	$58,703.71	1.74	95.89	Very High
	61203	Mooresville	$74,735.03	1.74	97.11	Very High
	61204		$78,615.57	1.74	97.30	Very High
	61205	Troutman	$54,242.88	1.74	95.45	Very High
	61301	Statesville	$17,645.44	1.74	85.49	Very High
	61302	Troutman	$37,015.50	1.74	92.68	Very High
	61303	Mooresville	$94,192.95	1.74	97.92	Very High
	61304		$75,393.96	1.74	97.15	Very High
	61401		$83,243.96	1.74	97.49	Very High
	61402		$99,921.92	1.74	98.11	Very High
	61403		$67,471.58	1.74	96.64	Very High
	61404		$59,242.95	1.74	95.96	Very High
	61405		$49,212.60	1.74	94.87	Very High
	61406		$104,021.90	1.74	98.25	Very High
	61407		$51,883.48	1.74	95.20	Very High
	61408		$53,920.83	1.74	95.43	Very High
	61501		$39,814.41	1.74	93.31	Very High
	61502		$51,553.69	1.74	95.16	Very High
	61503		$48,758.32	1.74	94.81	Very High
	61601		$47,777.52	1.74	94.67	Very High
	61603		$48,788.37	1.74	94.82	Very High
	61604		$13,226.08	1.74	82.06	Very High
	61605		$27,910.79	1.74	90.13	Very High
Rowan	50201	Faith, Granite Quarry, Salisbury	$12,728.03	2.28	81.59	Very High
	50202	Salisbury	$27,318.73	2.28	89.94	Very High
	50300		$12,855.18	2.28	81.71	Very High
	50400		$13,271.44	2.28	82.11	Very High
	50500	Salisbury, Spencer	$25,934.65	2.28	89.42	Very High
	50700	Spencer	$12,638.67	2.17	81.49	Very High
	50800	East Spencer, Salisbury, Spencer	$8,867.22	2.25	76.44	Relatively High
	50901	East Spencer, Spencer	$15,355.57	2.24	83.82	Very High
	50903	Granite Quarry	$17,504.37	2.28	85.39	Very High
	50904	Unincorporated	$8,266.06	2.28	75.38	Relatively High
	51001	Rockwell	$23,944.34	2.28	88.66	Very High
	51002	Faith, Granite Quarry, Salisbury	$18,230.53	2.28	85.85	Very High
	51101		$17,709.28	2.28	85.53	Very High

County	Census Tract	Jurisdiction(s)	Ice Storm EAL Total	Ice Storm Expected Annual Frequency	Ice Storm EAL Score	Ice Storm EAL Rating
	51102	Salisbury	$17,044.88	2.28	85.07	Very High
	51201		$17,137.59	2.28	85.13	Very High
	51202		$12,650.22	2.28	81.51	Very High
	51204		$14,365.10	2.28	83.06	Very High
	51301		$6,622.51	2.14	71.78	Relatively High
	51302	Salisbury, Spencer	$14,082.79	2.13	82.82	Very High
	51303	Salisbury	$19,696.42	2.24	86.71	Very High
	51400	Landis	$19,184.05	2.28	86.41	Very High
	51501	Unincorporated	$9,600.31	2.28	77.63	Relatively High
	51502		$7,570.14	2.15	73.95	Relatively High
	51600	China Grove, Landis	$22,513.60	2.28	88.03	Very High
	51700		$23,468.04	2.28	88.46	Very High
	51801	Unincorporated	$11,962.88	1.77	80.82	Very High
	51802	China Grove	$16,262.01	1.98	84.52	Very High
	51901	Cleveland	$15,879.38	1.86	84.24	Very High
	51903	Unincorporated	$8,407.59	2.03	75.66	Relatively High
	51904	Cleveland	$9,979.03	1.71	78.19	Relatively High
	52000	East Spencer, Salisbury, Spencer	$15,250.79	2.28	83.74	Very High
Planning Area Total			$2,744,187.17	**--**		

Table K- 9: NRI winter weather data by census tract

County	Census Tract	Jurisdiction(s)	Winter Weather Expected Annual Frequency	Winter Weather EAL Total	Winter Weather EAL Score	Winter Weather EAL Rating
Iredell	60100	Statesville	2.17	$3,354.36	68.42	Relatively High
	60200		2.17	$1,165.16	47.45	Relatively Moderate
	60300		2.17	$1,482.53	52.03	Relatively Moderate
	60400		2.17	$2,492.97	62.55	Relatively High
	60500		2.17	$2,499.03	62.59	Relatively High
	60601		2.17	$3,560.26	69.63	Relatively High
	60602		2.17	$1,164.64	47.44	Relatively Moderate
	60603		2.17	$1,134.72	46.97	Relatively Moderate
	60701		2.17	$1,712.46	54.82	Relatively Moderate
	60702		2.17	$2,334.31	61.19	Relatively High
	60703		2.17	$1,772.46	55.52	Relatively Moderate
	60801	Harmony	2.17	$2,022.35	58.21	Relatively Moderate
	60802		2.17	$2,058.38	58.57	Relatively Moderate
	60901	Love Valley	2.17	$1,960.91	57.61	Relatively Moderate
	60902	Unincorporated	2.17	$2,201.78	59.95	Relatively Moderate
	61001	Statesville	2.17	$2,304.56	60.89	Relatively High
	61002		2.17	$2,296.80	60.83	Relatively High
	61003		2.17	$2,237.80	60.27	Relatively High
	61101	Unincorporated	2.17	$1,519.79	52.49	Relatively Moderate

County	Census Tract	Jurisdiction(s)	Winter Weather Expected Annual Frequency	Winter Weather EAL Total	Winter Weather EAL Score	Winter Weather EAL Rating
	61102	Statesville	2.17	$1,899.58	56.94	Relatively Moderate
	61103	Unincorporated	2.17	$1,517.65	52.46	Relatively Moderate
	61104	Statesville	2.17	$1,242.41	48.60	Relatively Moderate
	61201	Statesville, Troutman	2.17	$2,937.99	65.81	Relatively High
	61202	Troutman	2.17	$2,904.62	65.60	Relatively High
	61203	Mooresville	2.17	$3,750.18	70.65	Relatively High
	61204		2.17	$2,711.30	64.25	Relatively High
	61205	Troutman	2.17	$2,296.39	60.82	Relatively High
	61301	Statesville	2.17	$1,530.98	52.61	Relatively Moderate
	61302	Troutman	2.17	$2,717.01	64.30	Relatively High
	61303	Mooresville	2.17	$3,324.61	68.25	Relatively High
	61304		2.17	$3,362.41	68.46	Relatively High
	61401		2.17	$3,144.84	67.17	Relatively High
	61402		2.17	$4,293.65	73.21	Relatively High
	61403		2.17	$2,351.64	61.33	Relatively High
	61404		2.17	$1,954.24	57.54	Relatively Moderate
	61405		2.17	$2,121.13	59.18	Relatively Moderate
	61406		2.17	$3,236.04	67.76	Relatively High
	61407		2.17	$2,571.33	63.18	Relatively High
	61408		2.17	$3,018.61	66.35	Relatively High
	61501		2.17	$2,660.44	63.87	Relatively High
	61502		2.17	$2,806.66	64.94	Relatively High
	61503		2.17	$2,744.45	64.51	Relatively High
	61601		2.17	$2,002.20	58.02	Relatively Moderate
	61603		2.17	$2,997.87	66.19	Relatively High
	61604		2.17	$803.94	41.31	Relatively Moderate
	61605		2.17	$1,679.53	54.44	Relatively Moderate
Rowan	50201	Faith, Granite Quarry, Salisbury	2.17	$2,284.53	60.72	Relatively High
	50202	Salisbury	2.17	$3,197.49	67.50	Relatively High
	50300		2.17	$2,026.35	58.25	Relatively Moderate
	50400		2.17	$1,811.64	55.97	Relatively Moderate
	50500	Salisbury, Spencer	2.17	$2,447.66	62.17	Relatively High
	50700	Spencer	2.17	$1,844.36	56.36	Relatively Moderate
	50800	East Spencer, Salisbury, Spencer	2.17	$1,580.51	53.25	Relatively Moderate
	50901	East Spencer, Spencer	2.17	$2,373.74	61.55	Relatively High
	50903	Granite Quarry	2.17	$3,462.56	69.06	Relatively High
	50904	Unincorporated	2.17	$1,467.74	51.82	Relatively Moderate
	51001	Rockwell	2.17	$4,276.45	73.14	Relatively High
	51002	Faith, Granite Quarry, Salisbury	2.17	$3,283.30	68.03	Relatively High
	51101		2.17	$3,781.07	70.79	Relatively High
	51102	Salisbury	2.17	$2,233.04	60.24	Relatively High
	51201		2.17	$3,699.32	70.38	Relatively High
	51202		2.17	$2,165.55	59.62	Relatively Moderate
	51204		2.17	$2,374.41	61.56	Relatively High
	51301		2.17	$1,531.00	52.61	Relatively Moderate
	51302	Salisbury, Spencer	2.17	$2,916.17	65.66	Relatively High
	51303	Salisbury	2.17	$3,282.78	68.02	Relatively High

County	Census Tract	Jurisdiction(s)	Winter Weather Expected Annual Frequency	Winter Weather EAL Total	Winter Weather EAL Score	Winter Weather EAL Rating
	51400	Landis	2.17	$4,063.15	72.15	**Relatively High**
	51501	Unincorporated	2.17	$2,260.76	60.49	**Relatively High**
	51502		2.17	$1,694.41	54.61	**Relatively Moderate**
	51600	China Grove, Landis	2.17	$3,964.25	71.69	**Relatively High**
	51700		2.17	$4,465.29	73.89	**Relatively High**
	51801	Unincorporated	2.17	$2,571.32	63.18	**Relatively High**
	51802	China Grove	2.17	$2,832.49	65.12	**Relatively High**
	51901	Cleveland	2.17	$2,868.36	65.36	**Relatively High**
	51903	Unincorporated	2.17	$1,887.71	56.82	**Relatively Moderate**
	51904	Cleveland	2.17	$1,899.64	56.95	**Relatively Moderate**
	52000	East Spencer, Salisbury, Spencer	2.17	$1,592.34	53.39	**Relatively Moderate**
Area Total				**$189,996.34**		

Table K- 10: NRI earthquake data summary by census tract

County	Census Tract	Jurisdiction(s)	Earthquake EAL Total	Earthquake EAL Score	Earthquake EAL Rating
Iredell	60100	Statesville	$50,519.90	72.62	**Very High**
	60200		$11,304.24	49.44	**Relatively High**
	60300		$14,724.82	55.01	**Relatively Moderate**
	60400		$38,860.68	69.85	**Relatively Moderate**
	60500		$37,820.14	69.54	**Relatively High**
	60601		$54,903.44	73.43	**Relatively High**
	60602		$8,752.14	43.52	**Relatively High**
	60603		$28,036.57	65.77	**Relatively Moderate**
	60701		$17,449.63	58.36	**Relatively High**
	60702		$16,752.00	57.58	**Relatively Moderate**
	60703		$27,771.53	65.66	**Relatively Moderate**
	60801	Harmony	$11,372.10	49.57	**Relatively High**
	60802		$14,011.00	54.01	**Relatively Moderate**
	60901	Love Valley	$14,632.83	54.89	**Relatively Moderate**
	60902	Unincorporated	$12,882.11	52.27	**Relatively Moderate**
	61001	Statesville	$24,133.29	63.72	**Relatively Moderate**
	61002		$15,692.29	56.32	**Relatively High**
	61003		$27,556.49	65.56	**Relatively Moderate**
	61101	Unincorporated	$7,309.86	39.52	**Relatively High**
	61102	Statesville	$14,413.73	54.57	**Relatively Low**
	61103	Unincorporated	$10,000.62	46.63	**Relatively Moderate**
	61104	Statesville	$13,476.38	53.21	**Relatively Moderate**
	61201	Statesville, Troutman	$21,483.35	61.99	**Relatively Moderate**
	61202	Troutman	$21,636.32	62.10	**Relatively High**
	61203	Mooresville	$32,529.19	67.69	**Relatively High**
	61204		$20,630.42	61.36	**Relatively High**
	61205	Troutman	$16,778.73	57.61	**Relatively High**

County	Census Tract	Jurisdiction(s)	Earthquake EAL Total	Earthquake EAL Score	Earthquake EAL Rating
	61301	Statesville	$7,378.13	39.73	Relatively Moderate
	61302	Troutman	$17,271.24	58.15	Relatively Low
	61303	Mooresville	$55,086.91	73.46	Relatively Moderate
	61304		$53,415.58	73.18	Relatively High
	61401		$29,354.12	66.39	Relatively High
	61402		$53,394.51	73.18	Relatively High
	61403		$56,910.10	73.75	Relatively High
	61404		$48,147.34	72.13	Relatively High
	61405		$18,276.87	59.25	Relatively High
	61406		$39,203.77	69.96	Relatively Moderate
	61407		$24,204.49	63.76	Relatively High
	61408		$15,328.04	55.83	Relatively High
	61501		$16,253.87	56.99	Relatively Moderate
	61502		$25,010.02	64.21	Relatively Moderate
	61503		$20,257.79	61.09	Relatively High
	61601		$34,109.82	68.28	Relatively High
	61603		$31,385.02	67.19	Relatively High
	61604		$4,895.74	31.05	Relatively High
	61605		$11,869.23	50.54	Relatively Low
Rowan	50201	Faith, Granite Quarry, Salisbury	$16,936.43	57.78	Very High
	50202	Salisbury	$56,817.92	73.73	Relatively Moderate
	50300		$23,505.59	63.33	Relatively High
	50400		$24,994.68	64.20	Relatively High
	50500	Salisbury, Spencer	$69,347.05	75.34	Relatively High
	50700	Spencer	$23,432.17	63.30	Relatively High
	50800	East Spencer, Salisbury, Spencer	$12,041.81	50.83	Relatively High
	50901	East Spencer, Spencer	$15,161.65	55.63	Relatively Moderate
	50903	Granite Quarry	$17,984.38	58.95	Relatively Moderate
	50904	Unincorporated	$9,762.57	46.06	Relatively Moderate
	51001	Rockwell	$34,481.12	68.40	Relatively Moderate
	51002	Faith, Granite Quarry, Salisbury	$14,075.38	54.11	Relatively High
	51101		$18,614.14	59.58	Relatively Moderate
	51102	Salisbury	$25,053.00	64.23	Relatively Moderate
	51201		$21,178.49	61.78	Relatively High
	51202		$16,278.83	57.02	Relatively High
	51204		$16,572.29	57.34	Relatively Moderate
	51301		$8,892.30	43.89	Relatively Moderate
	51302	Salisbury, Spencer	$15,570.63	56.15	Relatively Moderate
	51303	Salisbury	$25,342.78	64.38	Relatively Moderate
	51400	Landis	$23,425.13	63.29	Relatively High
	51501	Unincorporated	$10,828.36	48.46	Relatively High
	51502		$9,068.24	44.39	Relatively Moderate
	51600	China Grove, Landis	$30,540.54	66.84	Relatively Moderate
	51700		$36,171.19	68.98	Relatively High
	51801	Unincorporated	$23,204.66	63.15	Relatively High
	51802	China Grove	$30,263.95	66.73	Relatively High
	51901	Cleveland	$25,250.78	64.33	Relatively High
	51903	Unincorporated	$10,043.37	46.73	Relatively High
	51904	Cleveland	$15,856.73	56.51	Relatively Moderate

County	Census Tract	Jurisdiction(s)	Earthquake EAL Total	Earthquake EAL Score	Earthquake EAL Rating
	52000	East Spencer, Salisbury, Spencer	$33,095.56	67.89	**Relatively Moderate**
Planning Area Total			$1,860,978.10		

Table K- 11: NRI landslide data by census tract

County	Census Tract	Jurisdiction(s)	Landslide EAL Total	Landslide Expected Annual Frequency	Landslide EAL Score	Landslide EAL Rating
Iredell	60100	Statesville	$2,065.91	0.01	77.61	**Relatively High**
	60200		$36.20	0.01	42.02	**Relatively Moderate**
	60300		$368.81	0.01	53.06	**Relatively Moderate**
	60400		$2,027.91	0.01	77.30	**Relatively High**
	60500		$756.68	0.01	61.16	**Relatively High**
	60601		$2,485.38	0.01	80.70	**Very High**
	60602		$920.01	0.01	64.00	**Relatively High**
	60603		$834.80	0.01	62.58	**Relatively High**
	60701		$1,439.55	0.01	71.27	**Relatively High**
	60702		$2,905.32	0.01	83.26	**Very High**
	60703		$2,379.48	0.01	79.96	**Relatively High**
	60801	Harmony	$2,166.50	0.01	78.39	**Relatively High**
	60802		$2,449.60	0.01	80.44	**Very High**
	60901	Love Valley	$1,990.12	0.01	76.98	**Relatively High**
	60902	Unincorporated	$2,821.48	0.01	82.79	**Very High**
	61001	Statesville	$3,329.36	0.01	85.46	**Very High**
	61002		$3,133.31	0.01	84.51	**Very High**
	61003		$4,450.02	0.01	89.59	**Very High**
	61101	Unincorporated	$2,235.85	0.01	78.95	**Relatively High**
	61102	Statesville	$2,352.74	0.01	79.78	**Relatively High**
	61103	Unincorporated	$1,243.06	0.01	68.76	**Relatively High**
	61104	Statesville	$1,592.50	0.01	73.06	**Relatively High**
	61201	Statesville, Troutman	$4,174.20	0.01	88.70	**Very High**
	61202	Troutman	$3,824.62	0.01	87.50	**Very High**
	61203	Mooresville	$4,651.40	0.01	90.17	**Very High**
	61204		$7,756.07	0.01	95.18	**Very High**
	61205	Troutman	$5,675.91	0.01	92.46	**Very High**
	61301	Statesville	$1,215.92	0.01	68.39	**Relatively High**
	61302	Troutman	$2,777.86	0.01	82.54	**Very High**
	61303	Mooresville	$588.79	0.01	57.98	**Relatively Moderate**
	61304		$2,592.79	0.01	81.42	**Very High**
	61401		$5,410.71	0.01	91.94	**Very High**
	61402		$5,294.68	0.01	91.70	**Very High**
	61403		$2,440.88	0.01	80.39	**Very High**
	61404		$1,644.19	0.01	73.57	**Relatively High**

County	Census Tract	Jurisdiction(s)	Landslide EAL Total	Landslide Expected Annual Frequency	Landslide EAL Score	Landslide EAL Rating
	61405		$2,804.36	0.01	82.68	Very High
	61406		$5,663.05	0.01	92.43	Very High
	61407		$3,231.07	0.01	84.99	Very High
	61408		$4,468.63	0.01	89.64	Very High
	61501		$0.00	0.01	0.00	Very Low
	61502		$2,543.05	0.01	81.10	Very High
	61503		$3,551.46	0.01	86.45	Very High
	61601		$1,024.89	0.01	65.66	Relatively High
	61603		$4,476.80	0.01	89.66	Very High
	61604		$1,181.28	0.01	67.91	Relatively High
	61605		$1,422.76	0.01	71.05	Relatively High
Rowan	50201	Faith, Granite Quarry, Salisbury	$1,303.73	0.01	69.55	Relatively High
	50202	Salisbury	$750.53	0.01	61.07	Relatively High
	50300		$445.63	0.01	54.97	Relatively Moderate
	50400		$28.79	0.01	41.60	Relatively Moderate
	50500	Salisbury, Spencer	$4,424.38	0.01	89.50	Very High
	50700	Spencer	$3,420.18	0.01	85.84	Very High
	50800	East Spencer, Salisbury, Spencer	$1,239.41	0.01	68.71	Relatively High
	50901	East Spencer, Spencer	$10,518.53	0.01	96.86	Very High
	50903	Granite Quarry	$6,573.28	0.01	93.92	Very High
	50904	Unincorporated	$1,899.17	0.01	76.15	Relatively High
	51001	Rockwell	$4,007.82	0.01	88.14	Very High
	51002	Faith, Granite Quarry, Salisbury	$5,344.21	0.01	91.80	Very High
	51101		$4,460.90	0.01	89.62	Very High
	51102	Salisbury	$4,156.25	0.01	88.65	Very High
	51201		$5,260.81	0.01	91.63	Very High
	51202		$5,511.06	0.01	92.16	Very High
	51204		$5,131.06	0.01	91.35	Very High
	51301		$2,460.82	0.01	80.52	Very High
	51302	Salisbury, Spencer	$4,537.36	0.01	89.83	Very High
	51303	Salisbury	$7,624.63	0.01	95.08	Very High
	51400	Landis	$4,305.32	0.01	89.10	Very High
	51501	Unincorporated	$4,709.43	0.01	90.30	Very High
	51502		$1,691.46	0.01	74.11	Relatively High
	51600	China Grove, Landis	$5,345.29	0.01	91.81	Very High
	51700		$4,910.67	0.01	90.82	Very High
	51801	Unincorporated	$3,626.61	0.01	86.73	Very High
	51802	China Grove	$4,163.64	0.01	88.67	Very High
	51901	Cleveland	$8,906.91	0.01	96.06	Very High
	51903	Unincorporated	$3,795.87	0.01	87.39	Very High
	51904	Cleveland	$1,846.21	0.01	75.69	Relatively High
	52000	East Spencer, Salisbury, Spencer	$0.00	0.01	0.00	Very Low
Planning Area Total			$244,800.00	--		

Table K- 12: NRI Riverine Flooding data by census tract

County	Census Tract	Jurisdiction(s)	Riverine Flooding EAL Total	Riverine Flooding Expected Annual Frequency	Riverine Flooding EAL Score	Riverine Flooding EAL Rating	Riverine Flooding Risk Score	Riverine Flooding Risk Score Rating
Iredell	60100	Statesville	$23,756.70	0.83	67.21	Relatively High	71.29	Relatively High
	60200		$1,610.08	0.83	36.30	Relatively Low	39.03	Relatively Low
	60300		$4,014.67	0.83	43.98	Relatively Moderate	49.12	Relatively Moderate
	60400		$2,874.72	0.83	40.63	Relatively Moderate	44.33	Relatively Moderate
	60500		$5,288.37	0.83	47.02	Relatively Moderate	49.71	Relatively Moderate
	60601		$8,407.14	0.83	52.54	Relatively Moderate	56.85	Relatively Moderate
	60602		$1,837.82	0.83	37.18	Relatively Low	35.39	Relatively Low
	60603		$3,666.70	0.83	43.04	Relatively Moderate	47.28	Relatively Moderate
	60701		$4,320.33	0.83	44.66	Relatively Moderate	45.90	Relatively Moderate
	60702		$3,367.00	0.83	42.14	Relatively Moderate	43.19	Relatively Moderate
	60703		$2,866.98	0.83	40.61	Relatively Moderate	41.46	Relatively Moderate
	60801	Harmony	$5,536.28	0.83	47.54	Relatively Moderate	47.16	Relatively Moderate
	60802		$9,846.93	0.83	54.54	Relatively Moderate	53.93	Relatively Moderate
	60901	Love Valley	$5,868.21	0.83	48.18	Relatively Moderate	50.02	Relatively Moderate
	60902	Unincorporated	$8,895.53	0.83	53.21	Relatively Moderate	53.10	Relatively Moderate
	61001	Statesville	$5,740.67	0.83	47.92	Relatively Moderate	49.28	Relatively Moderate
	61002		$1,348.86	0.83	35.25	Relatively Low	34.99	Relatively Low
	61003		$13,279.06	0.83	58.66	Relatively Moderate	62.60	Relatively High
	61101	Unincorporated	$3,164.76	0.83	41.56	Relatively Moderate	40.38	Relatively Moderate
	61102	Statesville	$2,484.45	0.83	39.43	Relatively Low	40.42	Relatively Moderate
	61103	Unincorporated	$1,348.70	0.83	35.25	Relatively Low	35.23	Relatively Low
	61104	Statesville	$517.85	0.83	30.95	Relatively Low	30.76	Relatively Low

County	Census Tract	Jurisdiction(s)	Riverine Flooding EAL Total	Riverine Flooding Expected Annual Frequency	Riverine Flooding EAL Score	Riverine Flooding EAL Rating	Riverine Flooding Risk Score	Riverine Flooding Risk Score Rating
	61201	Statesville, Troutman	$1,869.47	0.83	37.33	Relatively Low	36.93	Relatively Low
	61202	Troutman	$3,511.77	0.83	42.56	Relatively Moderate	42.63	Relatively Moderate
	61203	Mooresville	$4,104.88	0.83	44.21	Relatively Moderate	45.11	Relatively Moderate
	61204		$12,001.53	0.83	57.23	Relatively Moderate	50.79	Relatively Moderate
	61205	Troutman	$8,645.51	0.83	52.87	Relatively Moderate	51.28	Relatively Moderate
	61301	Statesville	$3,117.38	0.83	41.40	Relatively Moderate	41.94	Relatively Moderate
	61302	Troutman	$4,403.37	0.83	44.86	Relatively Moderate	44.03	Relatively Moderate
	61303	Mooresville	$2,456.26	0.83	39.34	Relatively Low	37.08	Relatively Low
	61304		$992.88	0.83	33.57	Relatively Low	33.79	Relatively Low
	61401		$16,456.90	0.83	61.75	Relatively High	54.00	Relatively Moderate
	61402		$9,764.87	0.83	54.43	Relatively Moderate	53.84	Relatively Moderate
	61403		$1,192.72	0.83	34.52	Relatively Low	34.27	Relatively Low
	61404		$6,964.09	0.83	50.17	Relatively Moderate	47.66	Relatively Moderate
	61405		$7,715.40	0.83	51.47	Relatively Moderate	46.01	Relatively Moderate
	61406		$29,487.96	0.83	70.47	Relatively High	63.11	Relatively High
	61407		$15,821.31	0.83	61.14	Relatively High	60.71	Relatively High
	61408		$6,752.82	0.83	49.79	Relatively Moderate	44.82	Relatively Moderate
	61501		$637.89	0.83	31.68	Relatively Low	31.93	Relatively Low
	61502		$1,738.42	0.83	36.81	Relatively Low	36.36	Relatively Low
	61503		$4,353.05	0.83	44.74	Relatively Moderate	43.94	Relatively Moderate
	61601		$5,094.23	0.83	46.58	Relatively Moderate	50.92	Relatively Moderate
	61603		$3,085.23	0.83	41.29	Relatively Moderate	42.95	Relatively Moderate
	61604		$792.54	0.83	32.56	Relatively Low	31.86	Relatively Low
	61605		$1,642.36	0.83	36.42	Relatively Low	33.98	Relatively Low

County	Census Tract	Jurisdiction(s)	Riverine Flooding EAL Total	Riverine Flooding Expected Annual Frequency	Riverine Flooding EAL Score	Riverine Flooding EAL Rating	Riverine Flooding Risk Score	Riverine Flooding Risk Score Rating
Rowan	50201	Faith, Granite Quarry, Salisbury	$20,836.70	1.08	65.26	Relatively High	69.62	Relatively High
	50202	Salisbury	$18,381.13	1.08	63.37	Relatively High	70.01	Relatively High
	50300		$18,557.73	1.08	63.49	Relatively High	68.94	Relatively High
	50400		$10,292.08	1.08	55.12	Relatively Moderate	61.25	Relatively High
	50500	Salisbury, Spencer	$31,067.92	1.08	71.19	Relatively High	70.50	Relatively High
	50700	Spencer	$9,002.97	1.08	53.39	Relatively Moderate	57.91	Relatively Moderate
	50800	East Spencer, Salisbury, Spencer	$4,556.46	1.08	45.27	Relatively Moderate	49.60	Relatively Moderate
	50901	East Spencer, Spencer	$22,483.87	1.08	66.43	Relatively High	68.79	Relatively High
	50903	Granite Quarry	$8,394.88	1.08	52.52	Relatively Moderate	52.41	Relatively Moderate
	50904	Unincorporated	$2,110.09	1.08	38.19	Relatively Low	37.68	Relatively Low
	51001	Rockwell	$6,163.98	1.08	48.72	Relatively Moderate	52.21	Relatively Moderate
	51002	Faith, Granite Quarry, Salisbury	$13,972.19	1.08	59.39	Relatively Moderate	60.68	Relatively High
	51101		$7,169.13	1.08	50.53	Relatively Moderate	49.97	Relatively Moderate
	51102	Salisbury	$3,035.73	1.08	41.15	Relatively Moderate	42.47	Relatively Moderate
	51201		$5,940.59	1.08	48.32	Relatively Moderate	50.67	Relatively Moderate
	51202		$9,069.35	1.08	53.48	Relatively Moderate	56.89	Relatively Moderate
	51204		$5,158.31	1.08	46.74	Relatively Moderate	51.25	Relatively Moderate
	51301		$3,618.56	1.08	42.89	Relatively Moderate	44.59	Relatively Moderate
	51302	Salisbury, Spencer	$14,510.47	1.08	59.90	Relatively Moderate	59.90	Relatively Moderate
	51303	Salisbury	$21,426.67	1.08	65.70	Relatively High	70.47	Relatively High
	51400	Landis	$9,543.98	1.08	54.15	Relatively Moderate	58.77	Relatively Moderate
	51501	Unincorporated	$5,994.73	1.08	48.41	Relatively Moderate	53.67	Relatively Moderate
	51502		$916.38	1.08	33.16	Relatively Low	33.80	Relatively Low
	51600	China Grove, Landis	$20,617.95	1.08	65.10	Relatively High	69.62	Relatively High

County	Census Tract	Jurisdiction(s)	Riverine Flooding EAL Total	Riverine Flooding Expected Annual Frequency	Riverine Flooding EAL Score	Riverine Flooding EAL Rating	Riverine Flooding Risk Score	Riverine Flooding Risk Score Rating
	51700		$8,818.47	1.08	53.11	Relatively Moderate	56.87	Relatively Moderate
	51801	Unincorporated	$1,483.63	1.08	35.79	Relatively Low	37.08	Relatively Low
	51802	China Grove	$4,460.69	1.08	45.01	Relatively Moderate	45.95	Relatively Moderate
	51901	Cleveland	$18,385.82	1.08	63.37	Relatively High	62.24	Relatively High
	51903	Unincorporated	$9,533.26	1.08	54.12	Relatively Moderate	57.96	Relatively Moderate
	51904	Cleveland	$11,832.50	1.08	57.04	Relatively Moderate	59.15	Relatively Moderate
	52000	East Spencer, Salisbury, Spencer	$6,467.29	1.08	49.27	Relatively Moderate	54.42	Relatively Moderate
Planning Area Total			$606,448.15	--				

Table K- 13: Wildfire NRI data by census tract

County	Census Tract	Jurisdiction(s)	Wildfire EAL Total	Wildfire EAL Score	Wildfire EAL Rating	Wildfire Risk Score	Wildfire Risk Score Rating
Iredell	60100	Statesville	$974.55	65.26	Relatively High	69.83	Relatively High
	60200		$438.35	54.22	Relatively Moderate	59.76	Relatively Moderate
	60300		$287.06	48.78	Relatively Moderate	54.66	Relatively Moderate
	60400		$973.19	65.24	Relatively High	70.83	Relatively High
	60500		$496.24	55.81	Relatively Moderate	59.26	Relatively Moderate
	60601		$1,495.91	71.16	Relatively High	75.17	Relatively High
	60602		$503.68	56.03	Relatively Moderate	52.33	Relatively Moderate
	60603		$560.79	57.51	Relatively Moderate	63.40	Relatively High
	60701		$1,113.80	67.15	Relatively High	69.08	Relatively High
	60702		$1,087.09	66.79	Relatively High	68.69	Relatively High
	60703		$781.37	62.17	Relatively High	63.72	Relatively High
	60801	Harmony	$1,207.45	68.31	Relatively High	68.35	Relatively High

County	Census Tract	Jurisdiction(s)	Wildfire EAL Total	Wildfire EAL Score	Wildfire EAL Rating	Wildfire Risk Score	Wildfire Risk Score Rating
	60802		$1,682.33	72.60	Relatively High	72.51	Relatively High
	60901	Love Valley	$1,060.93	66.44	Relatively High	69.06	Relatively High
	60902	Unincorporated	$2,209.22	75.54	Relatively High	75.68	Relatively High
	61001	Statesville	$1,382.09	70.17	Relatively High	72.11	Relatively High
	61002		$1,296.90	69.35	Relatively High	69.26	Relatively High
	61003		$503.26	56.01	Relatively Moderate	60.02	Relatively High
	61101	Unincorporated	$628.26	59.11	Relatively Moderate	57.44	Relatively Moderate
	61102	Statesville	$677.35	60.16	Relatively High	62.07	Relatively High
	61103	Unincorporated	$875.58	63.87	Relatively High	64.28	Relatively High
	61104	Statesville	$1,115.29	67.17	Relatively High	67.03	Relatively High
	61201	Statesville, Troutman	$1,287.11	69.27	Relatively High	68.98	Relatively High
	61202	Troutman	$1,794.66	73.38	Relatively High	73.81	Relatively High
	61203	Mooresville	$2,349.57	76.09	Relatively High	77.03	Relatively High
	61204		$2,578.86	76.94	Relatively High	72.28	Relatively High
	61205	Troutman	$1,571.79	71.79	Relatively High	70.53	Relatively High
	61301	Statesville	$791.91	62.37	Relatively High	63.49	Relatively High
	61302	Troutman	$2,211.75	75.56	Relatively High	75.04	Relatively High
	61303	Mooresville	$4,336.47	80.24	Very High	78.57	Relatively High
	61304		$2,163.49	75.34	Relatively High	76.08	Relatively High
	61401		$3,884.09	79.60	Relatively High	75.85	Relatively High
	61402		$2,349.84	76.09	Relatively High	75.92	Relatively High
	61403		$1,851.89	73.75	Relatively High	73.70	Relatively High
	61404		$2,573.12	76.92	Relatively High	75.23	Relatively High
	61405		$2,198.79	75.49	Relatively High	70.58	Relatively High
	61406		$3,723.22	79.36	Relatively High	76.06	Relatively High
	61407		$3,098.42	78.23	Relatively High	78.09	Relatively High

County	Census Tract	Jurisdiction(s)	Wildfire EAL Total	Wildfire EAL Score	Wildfire EAL Rating	Wildfire Risk Score	Wildfire Risk Score Rating
	61408		$3,013.93	78.07	Relatively High	74.60	Relatively High
	61501		$1,647.38	72.35	Relatively High	73.61	Relatively High
	61502		$2,152.36	75.29	Relatively High	75.08	Relatively High
	61503		$3,095.51	78.23	Relatively High	77.83	Relatively High
	61601		$1,714.34	72.84	Relatively High	76.80	Relatively High
	61603		$1,930.47	74.21	Relatively High	76.10	Relatively High
	61604		$715.97	60.97	Relatively High	58.90	Relatively Moderate
	61605		$1,844.98	73.71	Relatively High	68.92	Relatively High
Rowan	50201	Faith, Granite Quarry, Salisbury	$1,341.70	69.77	Relatively High	73.89	Relatively High
	50202	Salisbury	$2,068.08	74.89	Relatively High	78.65	Relatively High
	50300		$368.52	51.95	Relatively Moderate	56.97	Relatively Moderate
	50400		$332.02	50.63	Relatively Moderate	56.32	Relatively Moderate
	50500	Salisbury, Spencer	$1,602.54	72.02	Relatively High	72.14	Relatively High
	50700	Spencer	$405.67	53.17	Relatively Moderate	57.73	Relatively Moderate
	50800	East Spencer, Salisbury, Spencer	$647.03	59.51	Relatively Moderate	65.17	Relatively High
	50901	East Spencer, Spencer	$2,127.55	75.17	Relatively High	76.93	Relatively High
	50903	Granite Quarry	$2,337.85	76.04	Relatively High	76.18	Relatively High
	50904	Unincorporated	$1,146.29	67.56	Relatively High	67.18	Relatively High
	51001	Rockwell	$3,045.90	78.14	Relatively High	79.80	Relatively High
	51002	Faith, Granite Quarry, Salisbury	$2,488.75	76.62	Relatively High	77.47	Relatively High
	51101		$2,838.14	77.65	Relatively High	77.43	Relatively High
	51102	Salisbury	$1,764.08	73.18	Relatively High	74.98	Relatively High
	51201		$2,122.97	75.15	Relatively High	77.11	Relatively High
	51202		$1,335.41	69.72	Relatively High	73.25	Relatively High
	51204		$1,612.90	72.09	Relatively High	76.37	Relatively High
	51301		$1,020.82	65.88	Relatively High	68.64	Relatively High

County	Census Tract	Jurisdiction(s)	Wildfire EAL Total	Wildfire EAL Score	Wildfire EAL Rating	Wildfire Risk Score	Wildfire Risk Score Rating
	51302	Salisbury, Spencer	$2,020.06	74.66	**Relatively High**	74.89	**Relatively High**
	51303	Salisbury	$1,997.55	74.55	**Relatively High**	77.72	**Relatively High**
	51400	Landis	$2,370.52	76.16	**Relatively High**	78.70	**Relatively High**
	51501	Unincorporated	$864.80	63.68	**Relatively High**	70.02	**Relatively High**
	51502		$1,249.77	68.81	**Relatively High**	71.02	**Relatively High**
	51600	China Grove, Landis	$3,050.21	78.15	**Relatively High**	79.99	**Relatively High**
	51700		$3,682.88	79.29	**Relatively High**	80.76	**Very High**
	51801	Unincorporated	$2,540.36	76.81	**Relatively High**	78.39	**Relatively High**
	51802	China Grove	$2,941.65	77.89	**Relatively High**	78.47	**Relatively High**
	51901	Cleveland	$2,301.16	75.90	**Relatively High**	75.46	**Relatively High**
	51903	Unincorporated	$1,096.43	66.92	**Relatively High**	71.16	**Relatively High**
	51904	Cleveland	$1,193.51	68.16	**Relatively High**	70.53	**Relatively High**
	52000	East Spencer, Salisbury, Spencer	$160.96	42.05	**Relatively Moderate**	46.34	**Relatively Moderate**
Area Total			**$130,306.70**	**--**			

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Michael D. Ambrose, Town Manager

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval of Awarding the Town Hall and Fire Department Roof Washing Bid (Project 25-58)**

DETAILS:

The Town Hall Roof was assessed by Lafave's Construction for our roof warranty company (McElroy Metals). McElroy Metals advised the roof was in great shape, and just needed to be cleaned. Staff was advised the cleaning of the roof, would make it shine again. It was the direction of the board to seek out proposals on roof cleaning companies, and costs associated with that.

Scott's Pressure Wash and Painting is out of Landis, NC, and has one google review, which is a five star rating from a Scott Honeycutt. Port City Pressure Washing is out of Concord, NC, and has 71 google reviews with an average 5.0 star rating. Sloops Pressure Washing is out of Concord, NC, and has 338 google reviews with an average 5.0 star rating.

The Town did informally receive three formal quotes from three different vendors which were Scott's Pressure Wash and Painting in the amount of $2,000, Port City Pressure Wash in the amount of $2,155, and Sloops Pressure Washing in the amount of $4,987.

ESTIMATE

SCOTT'S PRESSURE WASH & PAINTING

461 Kimball Loop Road • China Grove, NC 28023
Office: (704) 791-7114 • Nextel: 150*24*7549

TO: Town of Landis
City Hall Fire Dept

DATE: 7-4-2025

ESTIMATE NUMBER:

DATE	DESCRIPTION	LABOR	MATERIAL	TOTAL
	Pressure Wash Roof - City Hall Fire Dept			2000.00

TERMS		TOTAL	2000.00
F.O.B.			
COMPLETION			

APPROVED BY: DATE: P.O. #:

Applicable sales tax and freight will be added to your order. *Deposit or pre-payment may be required to place order.

ESTIMATE

EST-000197

Estimate Date: Apr 10, 2025
Expiry Date: May 08, 2025

FROM:
Port City Pressure Wash LLC
130 Bird Dog Drive
Mooresville, NC, 28115
Email: eli@portcitypw.co
Phone: (704) 361-8364

TO:
Matthew Geelen
312 S Main St
Landis, NC, 28088
Phone: (980) 825-8206

JOB LOCATION:
Matthew Geelen
312 S Main St
Landis, NC, 28088
Phone: (980) 825-8206

JOB:

#	Services	Total
1	Metal Roof Wash	$2,155.00

Restore the beauty and integrity of your roof with our specialized Roof Wash Service. Using gentle yet effective soft-washing techniques, we remove unsightly stains, moss, algae, and debris without causing any damage to your roofing materials. Our expert team ensures thorough cleaning, enhancing the curb appeal of your property while extending the lifespan of your roof. Trust Port City Pressure Wash to deliver exceptional results and protect your investment. Schedule your Roof Wash today and enjoy a refreshed roof! Please note that oxidation removal is not included in this estimate. Also refer to the attached highlighted picture for the scope of work included within the quote.

Subtotal	$2,155.00
Grand Total ($)	$2,155.00

Accepted payment methods
Credit Card, Check, Cash, Venmo

Message
I would be happy to have an opportunity to work with you.

You have a new estimate from Sloops Pressure Washing

Service date: Mon Mar 31, 2025

Prepared for: Landis Town Hall Landis Town Hall

Address: 312 S Main St, Landis, NC 28088

Option #1

$4,987.00

APPROVE

Estimate Details

Service	Total
Soft Wash Roof Cleaning (Metal)	$4,987.00

Soft-Wash metal roof to remove all organic growth. Absolutely no pressure is applied in any way to roofing to avoid damage of any kind. Black algae is apparent on roofing prior to service. Our process kills and eliminates the algae, cleans the streaking and restores roofing to proper condition. Estimate does not include any rust / iron removal. Any water / solution sensitive areas are protected prior to service. Downspouts that drain into landscape beds are

SHOW MORE

Service subtotal $4,987.00

Privacy - Terms

Subtotal	**$4,987.00**
Total	**$4,987.00**

Not what you were looking for?

Please let us know if you'd like to request some changes.
We'd love to win your business.

DECLINE ALL OPTIONS

Note

Thank you for doing business with Sloops. God Bless.

Please read Terms and Conditions

Contact us

Sloops Pressure Washing

(704) 796-8672

spwashing52@gmail.com

See our Terms & Conditions

Housecall Pro

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Blake Abernathy, Public Works Director

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval of the Electric Substation Material Bid (Project 25-62)**

DETAILS:

The Town of Landis requested bids for the electrical material necessary for construction of the new Public Works Substation. Bids were opened at Town Hall on April 3, 2025.

The Town received bids from fifteen suppliers and each item was evaluated on specification, cost, and delivery. The materials were separated into seven schedules and bid on independently. Schedule I is for 115KV Transmission Pole, Schedule II is for the Substation Structure, Schedule III is for the Circuit Switcher. Schedule IV is for a Power Transformer, Schedule V is for 15KV Circut Breakers, Schedule VI is Equipment House and Schedule VII is Relay and Control Board. Bids were received from WESCO, Substation Enterprises, NTS/Siemens, Modular Connections, Utility Packaging, MVA Power, Nucor, Virginia Trans. Corp, WEG, Howard Industrial, OTC Services, CO7 Tech, VFP Inc, Birmingham Control, and SEL.

I make the recommendations for the following by schedule: Schedule I - 115KV Transmission Pole, from WESCO, in the amount of 14,177.00, Schedule II - Substation Structure, from Substation Enterprises in the amount of $372,426.00, Schedule III - Circuit Switcher, from WESCO in the amount of $100,901.00, Schedule IV - Power Transformer, from Howard Industrial in the amount of $1,721,558.00, Schedule V - 15KV Circut Breakers, from NTS/Siemens in the amount of $103,428.00, Schedule VI - Equipment House, from Modular Connections in the amount of $138,021.00, and Schedule VII - Relay and Control Board from Utility Packaging in the amount of $64,808.00.

Southeastern Consulting Engineers, Inc.

April 11, 2025

Mr. Blake Abernathy
Public Works Director
P.O. Box 8165
Landis, North Carolina 28088

Ref.: Material Bid Recommendations
Public Works Substation

Dear Blake:

The Town received proposals on April 3, 2025, from fifteen suppliers and representatives solicited for providing electrical material necessary for construction of the new Public Works Substation.

A tabulation of the bids received is attached.

We have evaluated each item quoted based on compliance with the specifications, cost and delivery. These are the bidders we are recommending:

Schedule I - 115KV Transmission Pole	WESCO	$14,177.00
Schedule II - Substation Structure	Substation Enterprises	$372,426.00
Schedule III - Circuit Switcher	WESCO	$100,901.00
Schedule IV - Power Transformer	Howard	$1,721,558.00
Schedule V - 15KV Circuit Breakers	NTS/Siemens	$103,428.00
Schedule VI - Equipment House	Modular Connections	$138,021.00
Schedule VII - Relay and Control Board	Utility Packaging	$64,808.00

The total bid price for the above listed items excluding Sales Tax is $2,515,319.00.

If the Town agrees with our recommendations, we can assemble draft contracts for execution. Typically respondents offer their standard terms and some negotiation may be required to reconcile with Town requirements and preferences. This is the case with about half the vendors recommended and differences can usually be mitigated with a little input from the Town's Attorney. Once in an acceptable form, we can insert Purchase Orders and circulate the contracts for signatures.

600 MINUET LANE P.O. BOX 240436 CHARLOTTE, NC 28224
PHONE: (704) 523-6045 FAX: (704) 523-8317

Please let us know if you need additional information.

Very truly yours,

SOUTHEASTERN CONSULTING ENGINEERS, INC.

By_____
A.J. Molnar, P.E.
Vice President

AJM/lc

Attachment

BID TABULATION

Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	WESCO Clayton, NC	MVA Power Montreal, QB	Nucor Rock Hill, SC	Substation Enterprises Alabaster, AL	Virginia Trans. Corp. Roanoke, VA
Schedule I					
115KV Transmission Pole	$ 14,177.00	$ 25,450.00	$ 45,093.00	$ No Bid	$ No Bid
Manufacturer:	CHM	MVA			
Delivery:	20-24 Weeks	22-24 Weeks			
Schedule II					
115KV-12.47/7.2 KV Substation Structure	$ No Bid	$ 595,729.00	$ No Bid	$ 372,426.00	$ No Bid
Manufacturer:		MVA		SEI	
Delivery:		32-34 Weeks		50-52 Weeks	
Schedule III					
115KV Circuit Switcher	$ 100,901.00	$ 109,701.00	$ No Bid	$ No Bid	$ No Bid
Manufacturer:	S&C Electric	Southern States			
Delivery:	70-74 Weeks	65-66 Weeks			
Schedule IV					
Power Transformer w/LTC	$ No Bid	$ 2,059,200.00	$ No Bid	$ No Bid	$ 1,721,558.00
Manufacturer:		Astor A.S.			VTC
Delivery:		Unknown			65-70 Weeks
Schedule V					
Four 15KV Circuit Breakers	$ 134,708.00	$ 288,000.00	$ No Bid	$ No Bid	$ No Bid
Manufacturer:	MEPPI	EMA USA			
Delivery:	65 Weeks	26-28 Weeks			
	Alternate $155,304.00 Myers Cont. Pwr. 56-58 Weeks				

BID TABULATION (Continued)
Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	WESCO Clayton, NC	MVA Power Montreal, QB	Nucor Rock Hill, SC	Substation Enterprises Alabaster, AL	Virginia Trans. Corp. Roanoke, VA
Schedule VI					
Equipment Building	$ No Bid	$ 350,000.00	$ No Bid	$ No Bid	$ No Bid
Manufacturer:		Joaquin			
Delivery:		20-24 Weeks			
Schedule VII					
Relay and Control Board	$ No Bid	$ 112,200.00	$ No Bid	$ No Bid	$ No Bid
Manufacturer:		CP USA			
Delivery:		16-18 Weeks			
Applicable Price Terms	Net 30 Days				Negotiable Proposed 30% w/PO 30% w/Approvals 40% Completed

BID TABULATION

Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	WEG Washington, MO	Howard Ind. Laurel, MS	OTC Services Louisville, OH	Siemens/NTS Raleigh, NC	CO7 Tech. Montreal, QB
Schedule I					
115KV Transmission Pole	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule II					
115KV-12.47/7.2 KV Substation Structure	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule III					
115KV Circuit Switcher	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule IV					
Power Transformer w/LTC	$ 1,816,319.00	$ 1,890,000.00	$ 2,182,897.00	$ No Bid	$ No Bid
Manufacturer:	WEG	Howard	OTC		
Delivery:	120-130 Weeks	88 Weeks	208 Weeks		
Schedule V					
Four 15KV Circuit Breakers	$ No Bid	$ No Bid	$ No Bid	$ 103,428.00	$ 152,400.00
Manufacturer:				Siemens	CO7
Delivery:				26 Weeks	29-30 Weeks

BID TABULATION (Continued)
Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	WEG Washington, MO	Howard Ind. Laurel, MS	OTC Services Louisville, OH	Siemens/NTS Raleigh, NC	CO7 Tech. Montreal, QB
Schedule VI					
Equipment Building	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule VII					
Relay and Control Board	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Applicable Price Terms	Price Not Firm		Price Not Firm	Net 30 Days	

BID TABULATION

Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	Modular Connections Bessemer, AL	VFP, Inc. Roanoke, VA	Utility Packaging Carrollton, GA	Birmingham Control Bessemer, AL	SEL Charlotte, NC
Schedule I					
115KV Transmission Pole	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule II					
115KV-12.47/7.2 KV Substation Structure	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule III					
115KV Circuit Switcher	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule IV					
Power Transformer w/LTC	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					
Schedule V					
Four 15KV Circuit Breakers	$ No Bid	$ No Bid	$ No Bid	$ No Bid	$ No Bid
Manufacturer:					
Delivery:					

BID TABULATION (Continued)
Public Works Substation Structure and Electrical Equipment

Date: April 3, 2025
Time: 2:00 PM, EDT

Town of Landis
Landis, North Carolina

Bidder	Modular Connections Bessemer, AL	VFP, Inc. Roanoke, VA	Utility Packaging Carrollton, GA	Birmingham Control Bessemer, AL	SEL Charlotte, NC
Schedule VI					
Equipment Building	$ 138,021.00	$ 144,116.00	$ No Bid	$ No Bid	$ No Bid
Manufacturer:	Mod. Conn.	VFP			
Delivery:	26 Weeks	30-32 Weeks			
Schedule VII					
Relay and Control Board	$ No Bid	$ No Bid	$ 64,808.00	$ 72,995.00	$ 78,873.00
Manufacturer:			UP&C	BCS	SEL
Delivery:			18-24 Weeks	14-16 Weeks	18-20 Weeks
Applicable Price Terms	Net 30 Days		45% w/Approvals 55% Complete		

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Blake Abernathy, Public Works Director

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval to Award the Bull-Wheel Tensioner Bid to Sherman & Reilly in the Amount of $63,295 (Project 25-114)**

DETAILS:

The Town Electric Department is requesting several items of equipment in order to complete their own re-conduct operations. This Bull-Wheel Tensioner is apart of those items, and is an essential piece of machinery to re-conduct the power lines.

Town Staff formally advertised through an RFP that this was an intended purchase for the Town, which allowed vendors to submit sealed bids to the Town. This process was followed twice, due there not having a minimum of three bids on the first listing. The second deadline for sealed bids was April 17, 2025 at 2pm. Town Staff held an RFP Bid Opening on April 17, 2025, and received three bids for this equipment.

Bids were received from Technology International, Inc. in the amount of $70,500.00, TSE International, Inc. in the amount of $63,581.00, and Sherman & Reilly in the amount of $63,295.00. I make the recommendation to award the contract to Sherman & Reilly based on their safety standards for the equipment. This unit will protect the linemen from moving parts which are under high tension and all functions are performed from the control cockpit, eliminating "difference of potential" accidents. This equipment comes with a lifetime warranty.

Bull-Wheel Tensioner Bid Scoring Sheet **04/17/25 @ 2 pm**

Project 25-114

	#1	#2	#3	Weight	Score
Vendor	Sherman & Reilly	TSE International, Inc	Technology International, Inc.		
Materials	44,310.00	63,581.00	70,500.00		
Labor	18,985.00	-	-		
Other costs	-	-	-		
Total Price	63,295.00	63,581.00	70,500.00		
				0	

TOWN OF LANDIS
North Carolina

REQUEST FOR PROPOSALS (RFP)
Bull-Wheel Tensioner for Power Line Construction

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

PROPOSAL ATTACHMENTS

1-Bull-Wheel Tensioner

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name _Sherman & Reilly _____

Representative Name/Title__Cory Lindstrom Orders Specialist_____
Address___400 W 33rd Street Chattanooga TN 37410_____
Office Phone__423-756-5300_____ Cell Phone__423-680-7334 _____
Website Email https://www.sherman-reilly.com_sales@sherman-reilly.com_____

Material Costs	Labor Costs	Other / Note
$44,310	$18,985	

Total Cost__$63,295_____

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature_____ Date_3-18-25

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name City of Seguin

Address 205 N River Street Seguin TX 78155

Contact Name Freddy King Phone 210-854-4579

Business Relationship Customer

Business Name Holston Electric Cooperative

Address 1200 W Main St Rogersville TN 37857

Contact Name Brad Wilson Phone 423-272-1012

Business Relationship Customer

Business Name Huntsville Utilities

Address 112 Spragins Street Huntsville AL 35801

Contact Name Kim Wachter Phone 256-535-1364

Business Relationship Customer

Proposal Company Narrative

Company Name Sherman & Reilly

Number of Employees 119 Years of Operation 98

Current Clients Sherman & Reilly currently has 3180 active customer accounts ranging from contractors to distributors

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

Established in 1927, Sherman+Reilly remains a leading manufacturer of transmission and distribution equipment for North America's Electric Utility Industry. Through generations of dedicated professionals, and being driven by a commitment to lineman safety, the company continues to design and manufacture stringing equipment that sets the standard, including a complete range of overhead and underground pullers, tensioners, reel trailers, and reel stands.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name Old Republic Insurance Company

Agent's Name, Address, Telephone Lockton Companies, LLC

36575 Briarpark Drive, Suite 700 Houston TX 77042 866-260-3538

Policy Number MWZY 313093 24 Effective Date 5/1/2025

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name Sherman & Reilly

Official Address 400 W 33rd Street Chattanooga TN 37410

Signature & Title _____ Orders Specialist

Date 3-18-25

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official N French

Name and Title of Firm's Authorized Official Norman French CFO

Date 3-14-25

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?
Yes N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: ___Not applicable_____

_____

As a duly authorized representative, I certify the above information is accurate.

_____
Signature of Firm's Authorized Official

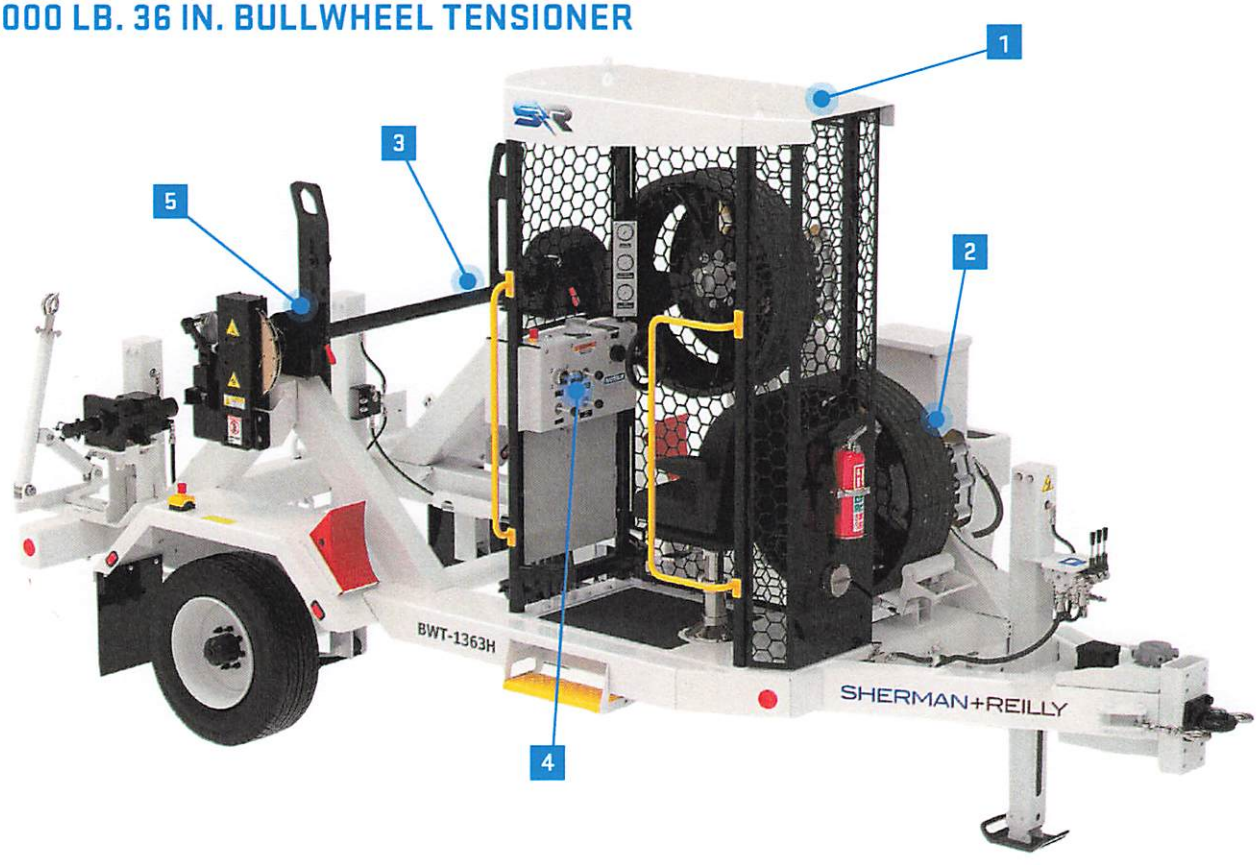
_____
Printed Name and Title of Firm's Authorized Official

_____
Date

SHERMAN+REILLY®

BWT-1363H HERITAGE TENSIONER

3,000 LB. 36 IN. BULLWHEEL TENSIONER



1. Safe-Zone® enclosure with Ocu-View™.
2. A set of 36 in. five-groove bullwheels with bolt-on cast linings.
3. Integrated reel carrier.
4. All stringing operations controlled from the safety of the Safe-Zone® enclosure.
5. Seamless reel change with Sherman + Reilly's pillow block bearing support.

FEATURES

- Tensioning capacity of 3,000 lb. for power in a compact configuration.
- Reel carrier accommodates reels up to 72 in. OD x 44.5 in. W and 6,500 lb.
- Two conductor keeper assemblies.
- Offset bullwheels and adjustable fairlead supports both LH and RH lay conductor.
- Available with hydraulic power pack for reel control, spider rewind, and hydraulic jack control.
- Also available with Pilot Line Spider® System *(pictured)*.

BWT-1363H HERITAGE TENSIONER

3,000 LB. 36 IN. BULLWHEEL TENSIONER

Sherman-Reilly.com

SPECIFICATIONS

Tensioning Capacity	3,000 lb.
Maximum Line Speed	4 mph
Maximum Conductor Reel Size	72 in. OD x 44.5 in. wide
Maximum Conductor Reel Weight*	Dynamic over the road: 6,500 lb. Static jacks extended: 6,500 lb.
Reel Shaft Diameter	2.625 in.
Reel Supports	Sealed Ball Bearing, Quick Release
Payout Brake	16 in. diameter disc, bronze
Bullwheels	Nominal Diameter: 36 in. Bullwheel Count: 2 ea. Bullwheel Groove Count: 5 per Bullwheel Groove Lining: Replaceable Groove Radius: .75 in. Groove Depth: .75 in. Bottom of Groove Diameter: 33.98 in.
Tension Brake	27.75 in. diameter disc, bronze
Brake Control	3-axis caliper, manual Hydraulic, operated from Safe-Zone® enclosure
Fairlead Rollers	Supports LH and RH Lay
Operator's Safety Enclosure	Open-air Safe-Zone® enclosure
Frame Construction	Steel tubing
Length (Overall, Nom.)	17 ft.
Width (Overall, Nom.)	8 ft.
Height (Overall, Nom., Empty)	9 ft. 6 in.
Weight (Nom.)*	6,500 lb.
GVWR*	13,000 lb.
Suspension	Leaf-spring
Axle Configuration	Single Axle - Single Wheel
Per Axle GAWR	12,000 lb. with tires 235/75R17.5 @ 125 psi
Brakes (Trailer)	Electric, with safety break-away switch
Towing Attachment	3 in. adjustable pintle eye
Safety Chains	2 each, with hooks
Bumper (SS/CS) Jacks	Manual drop and pin (2)
Tongue Jack	Manual 2-speed crank jack
Electrical System	Split 12 VDC
Backup Battery	12V
Lights / Navigation	US DOT, LED, 12 VDC
Grounding	1 in. grounding stud (1) Grade 5H
Deck Cover	Non-slip Surface
Wheel Chocks	Standard (2)
Fire Extinguisher	ABC
Color	S+R White

OPTIONS

Full vinyl cover
Bullwheel only cover
Payout brake cover
PowerPack option including hydraulic jacks, hydraulic retriever, and Spider® Pilot Line System with independent levelwind.
PowerPack option including hydraulic jacks, and hydraulic retriever
Air Brakes
Galvanized Finish Available
RDG-2100 Rotating Distribution Ground
DG-4100 Running Ground
12 V solar battery charger

BWT-1363H cab interior.

*Specifications are subject to change

© 2023 SHERMAN + REILLY, INC.

SHERMAN+REILLY

Quote: 13225

TOWN OF LANDIS
312 S. Main Street
LANDIS NC 28088

FormAddress-EmailURI:	sales@sherman-reilly.com
Date:	Feb 26, 2025
Your Reference:	BWT-1363H
Valid To:	May 5, 2025
Request Date:	May 26, 2025
Customer Number:	1015876
Contact:	6408 UTILITY SERVICE AGENCY
E-Mail:	sales@sherman-reilly.com

Dear Sir or Madam,
Thank you for your interest. We offer the following items:

Line	Product	Description	Quantity	Net Price	Net Value
10	626236	BWT-1363H;FINAL ASSY;3MJ	1 Each	63,295.00 USD / 1 Each	63,295.00 USD
	List Price		63,295.00 USD / 1 Each		63,295.00 USD
	State sales tax (%)		4.75 %		3,006.51 USD
	County sales tax (%)		2.25 %		1,424.14 USD

Total Item Net Value		63,295.00 USD
State sales tax (%)	4.75 %	3,006.51 USD
County sales tax (%)	2.25 %	1,424.14 USD
Total		**67,725.65 USD**

Payment Terms: 30 days net
Incoterms: FOB Origin, Freight Prepaid & Added

QUOTE DOES NOT INCLUDE SHIPPING AND HANDLING.

DELIVERY LEADTIME IS CONTINGENT ON FIRST RECEIPT OF PURCHASE ORDERS RELATED TO ACTIVE QUOTES IN-PROCESS. S+R WILL EITHER CONFIRM OR PROVIDE AN UPDATED DELIVERY LEADTIME AT THE TIME OF PURCHASE ORDER RECEIPT.

Sherman & Reilly, Inc.
400 West 33rd Street
Chattanooga, TN 37410 USA
www.sherman-reilly.com

SHERMAN+REILLY

Quote: 13225

Quote Number: 13225

Sherman + Reilly Terms and Conditions

Prices - Prices are subject to change without notice. The prices quoted are those in effect on the date of the quotation and will remain in effect for forty-five (45) days from the date of the quote. Prices are Ex-works Sherman + Reilly, Inc. (S+R) dock unless otherwise specified. Prices do not include, and Buyer shall pay, all costs and expenses incident to shipment and handling of products from point of delivery of the products by S+R to final destination.

Payment - Where S+R extends credit to the Buyer, terms of payment shall be net thirty (30) days from the invoice date in US currency unless specified otherwise on the quote. Unless otherwise specifically agreed to in writing, payment from Buyer shall not be contingent on payment or financing from a third party. Buyer is also responsible for any sales, use or excise or similar taxes, duties, or levies now or hereafter enacted or imposed by governmental authority on the sale, delivery and or use of the products sold by S+R. Buyer is responsible to provide a valid tax exemption certificate with their purchase order to avoid such tax being charged. If, in S+R's judgment, Buyer's financial condition does not justify the terms of payment specified, S+R may cancel delivery of the products unless the Buyer immediately pays for all products that have been delivered and pays in advance for other products that are due to be delivered. S+R retains the right to impose late fee of the lesser of 0.277% or the maximum allowed by law per day for all payments that are late.

Title and Delivery - All shipments of goods shall be delivered F.O.B. origin, and title and liability for loss or damage thereto shall pass to the Buyer upon delivery to the Buyer's carrier. Buyer shall be liable for costs of insurance and transportation, taxes and any other expenses incurred, or licenses required at destination. Shipping dates are approximate only. S+R shall not be liable for any loss or expense for failing to meet a specific shipping date. Buyer hereby grants a lien and security interest in products delivered until payment is received in full. If Buyer requests S+R hold products until Buyer arranges transportation, Buyer agrees to assume ownership of products on the date the products were ready for shipment.

Contingencies and Force Majeure - S+R shall not be liable for any delay in delivery caused by any contingency beyond the control of either S+R or S+R's suppliers, including, but not limited to, war, sabotage, insurrection, act of any government or any agency, judicial action, labor dispute, accident, insurance loss or other act of GOD.

Cancellation - Orders for any products submitted by Buyer and acknowledged by S+R cannot be canceled for any reason.

Inspection - Buyer, at its option and expense, may inspect products for compliance to its purchase order prior to shipment.

Limitation of Liability - Buyer shall defend, indemnify and hold harmless S+R, its employees and agents from and against all liabilities, claims, damages, losses and expenses for injury to any person or damage to real or tangible personal property which directly or indirectly arises out of the acts or omissions of Buyer, the breach of any agreement between the parties or the misuse, unsafe, negligent, or inappropriate use of any products sold by S+R to Buyer.

Non-Waiver of Default and Collection Rights - In the event of any default by the Buyer, S+R may invoke any remedy provided by law or by terms of this quote and may decline further shipments.

Applicable Law and Forum - All matters arising out of or relating to this quote shall be governed by and in accordance with the laws of the State of Tennessee, without giving effect to principles of conflict of laws. Any legal suit, action or proceeding arising out of this quote shall be instituted exclusively in the state or federal courts located in Hamilton County, Tennessee.

LIMITED WARRANTY - Please refer to www.sherman-reilly.com for all warranty terms.

Complete Agreement - Any purchase from S+R shall be solely governed by the terms and conditions of this Quote. Any terms or conditions introduced by Buyer either directly, indirectly by way of reference or otherwise, and whether as part of a purchase order, acknowledgment, email, or other means are hereby explicitly rejected and shall not apply.

Sherman & Reilly, Inc.
400 West 33rd Street
Chattanooga, TN 37410 USA
www.sherman-reilly.com

TOWN OF LANDIS
North Carolina

REQUEST FOR PROPOSALS (RFP)

Bull-Wheel Tensioner for Power Line Construction

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

PROPOSAL ATTACHMENTS

1-Bull-Wheel Tensioner

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name TSE International, Inc.

Representative Name/Title John Martin / General Sales Manager
Address 5301 Shreveport-Blanchard Hwy., Shreveport, LA 71107
Office Phone (318)929-2368 Cell Phone
Website Email_ https://tse-international.com/

Material Costs	Labor Costs	Other / Note

Total Cost $63,581.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature Date 3/21/25

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name Central Virginia COOP

Address Central Virginia Electric Coop, 800 Cooperative Way Arrington, VA 22922

Contact Name Jay Palmer Phone 434-981-6984

Business Relationship Customer

Business Name Hopkinsville Water Environmental Authority

Address 401 East 9th Street, Hopkinsville, KY 42240

Contact Name Joey Renshaw Phone 270-887-2782

Business Relationship Customer

Business Name Jackson Energy Authority

Address 351 Martin Luther King Jr, Dr., Jackson, TN 38301

Contact Name Charlie Jones Phone 731-988-8512

Business Relationship Customer

Proposal Company Narrative

Company Name TSE International, Inc.

Number of Employees 50-100 Years of Operation 44 Years

Current Clients Lower Colorado River Authority, Alabama Power, Pike , Salt River Project

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

TSE has been successfully designing and manufacturing tension stringing equipment for over 44 years and our equipment is in use worldwide. Our extensive product line provides electric utilities with a wide range of solutions for both aerial and underground projects in electric transmission and communications. TSE specializes in customizing our product line to suit the unique requirements of individual customers throughout the industry.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name Arthur J. Gallagher Rish Management Services, LLC

Agent's Name, Address, Telephone Lauren McWilliams, 470 Ashley Ridge Boulevard, Shreveport, LA 71106, (318)629-8104

Policy Number TB1-B71-171154-014 Effective Date 6/30/2024 - 6/30/2025

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name TSE International, Inc.

Official Address 5301 Shreveport-Blanchard Hwy., Shreveport, LA 71107

Signature & Title _____ General Sales Manager

Date 5/21/25

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96) Note: Language in paragraph (2)herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements)and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995) Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)(2)(A) any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official _____

Name and Title of Firm's Authorized Official JOHN MARTIN GENERAL SALES MANAGER

Date 3/21/25

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE)proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes No N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: _____

_____ _____

As a duly authorized representative, I certify the above information is accurate.

_____

Signature of Firm's Authorized Official

_____

Printed Name and Title of Firm's Authorized Official

_____

Date

5301 Shreveport-Blanchard Highway
Shreveport, Louisiana, 71107
Telephone 800-825-2402 – Fax 318-929-4853
Website: www.tse-international.com

Proposal # **Q032125BD01**
Date: **03/21/2025**
Valid to: **04/21/2025**

Maddalyn Shuffler
Deputy Town Clerk
Town of Landis
312 S. Main St.
Landis, NC 28088

Dear Ms. Shuffler,

TSE is pleased to offer the following equipment for your review:

1.0 1 ea. **TSE MODEL T30/36 BWRC COMBINATION TENSIONER / REEL CARRIER**

BASIC UNIT DESCRIPTION

Performance
* Continuous performance of 3,000 lbs. tension at 4.0 mph.
* Capable of tensioning of conductors up to 795 ACSR.

Bull wheels
* Two four groove bull wheels 36 in. in diameter.
* Groove diameter of 1.25 in.
* Each bull wheel has three bolt-on replaceable urethane lining segments.
* The bull wheel rotates on heavy duty bearings.
* Open reeved for easy installation and removal of the conductor.
* Each bull wheel has a 24 in. diameter bronze disc brake and a hydraulic brake caliper.
* The bull wheel brakes are controlled by a single hydraulic control with fine adjustment to ensure equal tensioning force is exerted on each bull wheel.

Control Console
* A pressure gauge and performance chart, mounted on a control panel, are provided to indicate the tension in the conductor.

Fairlead
* A 4-roller fairlead with rubber lined rollers mounted on roller bearings is located to ensure conductor is guided from the reel to the entrance groove.

Reel Capacity
* Maximum reel diameter capacity is 72 in.
* Maximum reel width capacity is 54 in.
* Maximum reel weight capacity is 7,000 lbs.

Reel Shaft
* The reel shaft is 2-5/8 inches in diameter.
* Equipped with a double drive arm with 2 adjustable drive pins, a clamp type locking collar and lifting loops.
* The reel shaft is mounted on replaceable bronze full circle sleeve bearings with grease fittings for smooth operation and long life.
* The reel tensioning brake is a 16 in. diameter bronze, ventilated disc with a manually adjustable caliper. The reel brake provides adequate tension to prevent over spin of the reel as it enters the bull wheel tensioning module.
* The reel shaft is designed for quick reel change. The reel and shaft are lifted straight up with no side shift required to remove the assembly. No tools or adjustments to the over spin brake are required.

Trailer and Undercarriage
* Tandem axle set with 12,000 lbs capacity, spring type with electric brakes and a break away switch.
* Two breakaway safety chains with hooks.
* Four tires to suit the capacity of the unit.
* LED lighting with a dual tail light system.
* Heavy duty, crank type, drop leg mechanical tongue and rear jacks.
* 3" pintle hitch adjustable to 4 height positions using pin type connections which do not require tools for adjustment.
* The trailer frame and tongue are constructed of tubular steel and are fully welded.
* Heavy duty checker plate fenders.
* The unit is sandblasted, primed and painted with two coats of paint.

Unit Price Each $63,581.00

OPTIONS INCLUDED IN PRICE

1 ea. Operator's Platform with Seat and Control panel.

1 ea. Operator's Screen and Bullwheel Guard.

Clarifications and Exceptions

Page 3 Reel Capacity is 7,000 lbs. accommodate 72 inch reel
Page 3 TSE groove count is 4.
Page 3 No enclosed cab. Operator's platform is protected by screen, top cover, and bullwheel guard.

Change in Specification:

Design and improvement of TSE's products is a continuous process; we therefore reserve the right to make design improvements differing from this specification after receipt of an order, however, any major changes will be confirmed in writing. Because of our continuous improvement efforts there is also no guarantee by TSE that the equipment quoted in this specification will be identical to any equipment supplied on previous orders even if the model number is the same.

Operator Training:

In an effort to ensure the safe operation of the equipment quoted in this proposal TSE is pleased to offer one training session free of charge provided after delivery at a time mutually convenient for both parties.

Pricing:	For all orders, TSE reserves the right to review the cost of major components a minimum of 90 days prior to completion of the purchase order and adjust pricing accordingly. If a price adjustment is required, TSE will provide the new price in writing.
Taxes:	Any and all applicable taxes and duties are not included.
F.O.B.:	Shreveport, LA
Delivery:	12 – 14 weeks, to be confirmed after acceptance of purchase order.
Terms:	35% deposit, remaining 65% balance TBD at time of order, subject to credit approval. TSE Standard Terms and Conditions of Sale apply, reference form TC082020.

If we can assist you in any way, please let us know.

Sincerely,

Becky Daniel
Inside Sales Coordinator

CC: Payton Harris, Eastern Business Development Manager

The above proposal is subject to the conditions of sale below unless otherwise stated, and in accordance with attached specifications and literature all of which constitute part of this offer. Terms indicated are subject to Credit Department approval.

TC082020

TSE INTERNATIONAL INC.
5301 Shreveport-Blanchard Hwy.
Shreveport, Louisiana, 71107, USA
herein referred to as "TSE"

GENERAL CONDITIONS OF SALE

I. Design and improvement of our equipment is a continuous process. TSE therefore reserves the right to make design improvements after receipt of an order. Photographs and other illustrations or advertising matter represent generally the goods offered, but are not binding on detail.

II. Delivery dates are estimated as accurately as possible, but are not guaranteed in any way unless otherwise specifically provided for in this proposal.

III. Unless otherwise specifically provided for in this proposal, this offer does not include a penalty clause of any kind and acceptance of this offer may not create, by its terms, any such penalty.

IV. Prices quoted herein are based on current duty and currency exchange rates where applicable, and TSE reserves the right to adjust prices to compensate for any changes in these rates, should it be necessary to do so.

V. Notwithstanding any conditions printed on the Purchaser's order form, in accepting this offer the Purchaser agrees to the following TERMS AND CONDITIONS OF SALE which are also detailed on the TSE Acknowledgement and Acceptance of Order Form, and these only will apply unless otherwise specifically provided in this proposal.

TERMS AND CONDITIONS OF SALE

1. **CONTRACT OF SALE** – This order is accepted on, and is subject to, the terms and conditions set forth on the face hereof and below, none of which may be varied or added to except in writing, signed by TSE's duly authorized representative. Any inconsistent matters, terms or conditions in Purchaser's order or confirmation will not be binding on TSE. TSE HEREBY EXPRESSLY OBJECTS TO ANY ADDITIONAL OR DIFFERENT TERMS IN ANY OF PURCHASER'S DOCUMENTS.

2. **COMPLETION** – Unless otherwise provided on the face hereof, time for the completion of manufacture of the machinery and equipment covered by this order (hereinafter called the "Machinery") shall be computed from the date of this Acknowledgement and Acceptance of Order, or from the date on which TSE has received from the Purchaser any information, drawings, data, patterns, or other material which are to be supplied by the Purchaser and are necessary to proceed with the manufacture of the Machinery, whichever is the latest. TSE shall not be responsible for delays in delivery or any failure to deliver due to causes beyond its control including without limitation: acts of God or the public enemy; mobilization; blockades; embargoes; revolution; civil commotions; riots; fires; floods; winds; earthquakes; epidemics; quarantine restrictions; explosions; accidents; other catastrophes; strikes; slow-downs; lock-outs or other labor difficulties; the acts; laws or regulations of any government or governmental authority; federal, state, local or foreign, including safety, health and environmental regulations; unusual weather; delays of sub-contractors or supplies; or inability to obtain shipping facilities, labor raw materials, supplies, fuel or power.

3. **MINIMUM INVOICE** – The minimum single invoice or billing charge is $100.00.

4. **PAYMENTS** – If payment of any part of the purchase price is not made as provided on the face thereof, TSE reserves the right to discontinue manufacture of the Machinery until such payment has been made and to revoke any further credit, whereupon TSE shall have the right to receive payment before any further shipment of Machinery. IN the case of any delay in payment or in establishing agreed security for payment, time for completion may, at TSE's option, be extended for a corresponding period. When any payment is due upon shipment of delivery and shipment is delayed for any cause beyond TSE's control, payment shall be made when the Machinery is ready for shipment. Purchaser agrees that any letters of credit or other guarantee of payment shall be maintained fully valid until final payment has been made. IF PAYMENT IS NOT MADE WITHIN THIRTY DAYS FROM THE DATE OF SHIPMENT UNDER THE TERMS OF THIS AGREEMENT, PURCHASER AGREES TO PAY TSE AN ADDITIONAL SUM EQUAL TO ONE AND ONE-HALF PERCENT (1 ½%) PER MONTH (18% PER ANNUM) OF THE UNPAID PURCHASE PRICE UNTIL PAYMENT IS MADE.

5. **SECURITY INTEREST** – TSE retains a vendor's lien in the Machinery to secure payment in full of the purchase price and any and all other payments which may be or become payable to TSE hereunder. If possession of the Machinery is given to the Purchaser before full payment, the Purchaser shall execute any additional instruments including with our limitation security agreements and financing statements necessary to perfect or maintain TSE's vendor's lien and shall pay or reimburse TSE for all filing or recording. In the event of default in payment of any installment of the purchase price when due, the entire balance thereof shall, at TSE's option, become immediately due and payable, and TSE shall have and may exercise all the rights of a secured party then in force under the laws of the State of Louisiana, United States or such other state as may then have jurisdiction over the Machinery, including without limitation the right to repossess the Machinery with or without legal process.

6. **DELIVERY AND PURCHASE PRICE** – Unless otherwise provided on the face hereof, delivery is to be made f.o.b. TSE's plant, Shreveport, Louisiana, United States. Risk of loss within the meaning of the Sale of Goods Act of the State of Louisiana shall pass to the Purchaser at the stated point of delivery. The purchase price includes ordinary packing for shipment, but if special packing or tie-down and blocking to anchor the machinery to the transport vehicle is required, TSE is to be reimbursed for the cost thereof. Any freight or insurance costs which may be included in the purchase price are based on rates at the date of this Acknowledgement and Acceptance of Order and any increase shall be paid by the Purchaser.

7. **WARRANTIES** – TSE MAKES NO WARRANTY THAT THE MACHINERY SHALL BE MERCHANTABLE OR FIT FOR ANY PARTICULAR PURPOSE NOR DOES IT MAKE ANY OTHER WARRANTY, EXPRESS OR IMPLIED EXCEPT AS IS EXPRESSLY SET FORTH HEREIN. TSE warrants that the machinery will conform to the description of the face hereof; that it will convey good title thereto; that such goods will be delivered free from lawful security interest or other lien or

encumbrance unknown to the Purchaser except as otherwise expressly provided herein. TSE warrants that it will repair f.o.b. its factory, or furnish without charge f.o.b. it factory, a similar part to replace any material in its machinery which, during the earlier of 90 days after the said machinery is put into operation or six months after the date of shipment of the machinery from its plant, is provided to the satisfaction of TSE to have been defective at the time it was sold, provided that all parts claimed defective shall be returned, properly identified, to TSE's factory, charges prepaid.

8. This Warranty to repair applies only to new and unused machinery, which, after shipment from the factory of TSE, has not been altered, changed, repaired or treated in any manner whatsoever unless such alteration, change, repair or treatment has been previously authorized in writing by TSE or has been performed by the authorized service representative of TSE.

9. This Warranty to repair is the only Warranty either express, implied, or statutory, upon which the said machinery is sold; the company's liability in connection with this transaction is expressly limited to the repair or replacement of defective parts, all other damages and warranties, statutory or otherwise, being hereby expressly waived by the Purchaser.

10. TSE shall not be liable for any incidental or consequential damages for breach of any warranty and the Purchaser's sole remedy for breach of any warranty or for any negligence of TSE shall be set forth herein.

11. No representative of TSE has authority to change this Warranty or this contract in any manner whatsoever and no attempt to repair or promise to repair or improve the machinery covered by this contract by any representative of TSE and shall waive any consideration of the contract or change or extend this Warranty in any manner whatsoever.

12. **LIABILITY** – purchaser agrees to hold TSE harmless from, and to indemnify it against, any and all claims, demands, actions, and causes of action of any nature whatsoever, and any expenses incident to the defense thereof, for injury to or death of person and loss of or damage to property arising in connection with the Machinery from the assembly, erection, operation, or use thereof.

13. **TAXES** – All present and future sales, use, excise and similar taxes imposed by any federal, state, local or foreign government which TSE may be required to pay or collect with respect to the Machinery or the sale, transportation, storage, use or consumption thereof shall be for the account of the Purchaser to the extent permitted by law.

14. **NON-CANCELLABLE** – This order is not subject to cancellation or revision by the Purchaser except with TSE's written consent. Cancellation charges will be the greater of:

    i) Fifteen percent (15%) of the total purchase price to cover Sales Administration and handling costs, or

    ii) The cost of all unfinished material and the shop labor with overhead plus component cancellation charges from TSE's vendors if any, plus Engineering costs incurred with overhead, plus all sales and administrative overhead and profit in proportion to the state of completion of the product at the time of cancellation of order. Upon payment to TSE as above provided, all equipment manufactured under the contract will become the property of the Purchaser.

15. **NON-ASSIGNABLE** – Neither this contract nor any interest herein is assignable or transferable without the express written consent of TSE.

16. **WAIVER** – Any waiver of either the Purchaser or TSE of a breach by the other of any provision of this contract of sale shall not be deemed a waiver of future compliance therewith, and all provisions shall remain in full force and effect, notwithstanding any such waiver.

17. **LIMITATION OF ACTION** – No action shall be brought by the Purchaser for any alleged breach by TSE of this Contract of Sale more than one (1) year after the occurrence of the cause of such alleged breach of contract.

18. **APPLICABLE LAW** – This contract shall be governed and construed according to the law of the State of Louisiana, United States.

SPECIAL CONDITIONS FOR EXPORT SALES

A. **EXPORT LICENSE** – If any United States of America regulation requires an export license, TSE will apply for such license at its expense, and Purchaser agrees to furnish all information required for such license application. In case TSE is unable to secure an export license, the contract between the parties shall be cancelled without liability on either party.

B. **IMPORT LICENSE** – If an import license is required, it is to be provided by Purchaser who will see that it remains valid and effective until the import has been completed.

C. **REGULATIONS** – The making and performance of the contract between the parties are subject to compliance with all applicable laws and regulations of the United States Government and agencies thereof, and in case any such law or regulation should prevent TSE from performing or completing the contract in accordance with the terms thereof, then the contract may be terminated by TSE upon written notice to the Purchaser. In such event, TSE and any surety for TSE upon written notice will be relieved of all further obligation to proceed; any guaranty deposit or surety bond furnished by TSE shall immediately be returned to TSE and TSE is to be paid the proportion of the contract price, including profit, represented by the expenditure made and the obligations contracted to the date of such termination. Upon return to TSE of any guaranty deposit or surety bond and payment to TSE as above provided, all equipment manufactured under the contract will become the property of the Purchaser.

TOWN OF LANDIS North Carolina

REQUEST FOR PROPOSALS (RFP)
Bull-Wheel Tensioner for Power Line Construction

Town of Landis, North Carolina

Issued: April 03, 2025

Response Due: April 17, 2025

PROPOSAL ATTACHMENTS

1-Bull-Wheel Tensioner

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name Technology International, Inc

Representative Name/Title RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE
Address 1331 South International Parkway, Suite 2251 Lake Mary, Florida 32746
Office Phone (407) 359-2373 Cell Phone (407) 359-2373
Website Email tii@tii-usa.com

Material Costs	Labor Costs	Other / Note

Total Cost 70,500.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature RIFAT HABIB Date 04/16/2025

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name U.S. Navy

Address China Lake, CA 93555

Contact Name Terryl Mitchell Phone 760-939-1998

Business Relationship

Business Name North County Transit District

Address 810 Mission Avenue Oceanside CA 92054

Contact Name Ms. Janet Bessent Phone 760-966-6592

Business Relationship

Business Name Town of Windsor

Address 301 Walnut street Windsor, CO 80550

Contact Name Mr. Coby Shurtleff Phone 970-674-5401

Business Relationship

Proposal Company Narrative

Company Name Technology International, Inc

Number of Employees 10 Years of Operation 32

Current Clients

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name_____

Agent's Name, Address, Telephone_____

_____

Policy Number _____Effective Date_____

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name Technology International, Inc

Official Address 1331 South International Parkway, Suite 2251,Lake Mary, Florida 32746

Signature & Title RAFAT HABIB

Date 04/16/2025

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official RIFAT HABIB

Name and Title of Firm's Authorized Official RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE

Date 04/16/2025

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: (Prime firm) Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes (No)

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes (No)

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes NO N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: TECHNOLOGY INTERNATIONAL INC

1331 S INTERNATIONAL PKWY, SUITE 2251

As a duly authorized representative, I certify the above information is accurate.

Signature of Firm's Authorized Official

RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE

Printed Name and Title of Firm's Authorized Official

04/16/25

Date

SHERMAN+REILLY

BWT-1363H HERITAGE TENSIONER

3,000 LB. 36 IN. BULLWHEEL TENSIONER

1. Safe-Zone® enclosure with Ocu-View™.
2. A set of 36 in. five-groove bullwheels with bolt-on cast linings.
3. Integrated reel carrier.
4. All stringing operations controlled from the safety of the Safe-Zone® enclosure.
5. Seamless reel change with Sherman + Reilly's pillow block bearing support.

FEATURES

- Tensioning capacity of 3,000 lb. for power in a compact configuration.
- Reel carrier accommodates reels up to 72 in. OD x 44.5 in. W and 6,500 lb.
- Two conductor keeper assemblies.
- Offset bullwheels and adjustable fairlead supports both LH and RH lay conductor.
- Available with hydraulic power pack for reel control, spider rewind, and hydraulic jack control.
- Also available with Pilot Line Spider® System *(pictured)*.

BWT-1363H HERITAGE TENSIONER

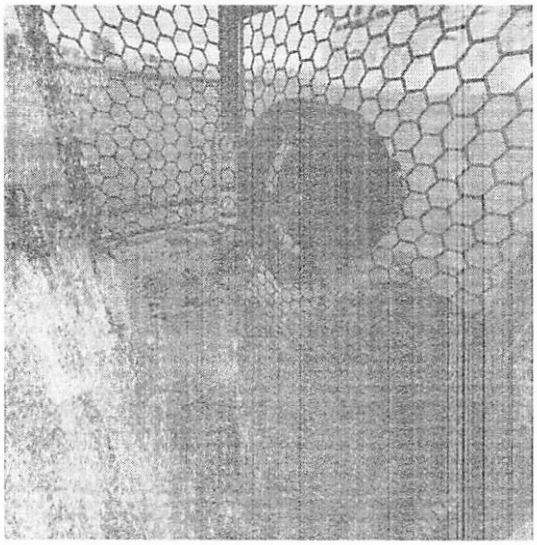
3,000 LB. 36 IN. BULLWHEEL TENSIONER

SPECIFICATIONS

Tensioning Capacity	3,000 lb.
Maximum Line Speed	4 mph
Maximum Conductor Reel Size	72 in. OD x 44.5 in. wide
Maximum Conductor Reel Weight*	Dynamic over the road: 6,500 lb. Static jacks extended: 6,500 lb.
Reel Shaft Diameter	2.625 in.
Reel Supports	Sealed Ball Bearing, Quick Release
Payout Brake	16 in. diameter disc, bronze
Bullwheels	Nominal Diameter: 36 in. Bullwheel Count: 2 ea. Bullwheel Groove Count: 5 per Bullwheel Groove Lining: Replaceable Groove Radius: .75 in. Groove Depth: .75 in. Bottom of Groove Diameter: 33.98 in.
Tension Brake	27.75 in. diameter disc, bronze
Brake Control	3-axis caliper, manual Hydraulic, operated from Safe-Zone® enclosure
Fairlead Rollers	Supports LH and RH Lay
Operator's Safety Enclosure	Open-air Safe-Zone® enclosure
Frame Construction	Steel tubing
Length (Overall, Nom.)	17 ft.
Width (Overall, Nom.)	8 ft.
Height (Overall, Nom., Empty)	9 ft. 6 in.
Weight (Nom.)*	6,500 lb.
GVWR*	13,000 lb.
Suspension	Leaf-spring
Axle Configuration	Single Axle - Single Wheel
Per Axle GAWR	12,000 lb. with tires 235/75R17.5 @ 125 psi
Brakes (Trailer)	Electric, with safety break-away switch
Towing Attachment	3 in. adjustable pintle eye
Safety Chains	2 each, with hooks
Bumper (SS/CS) Jacks	Manual drop and pin (2)
Tongue Jack	Manual 2-speed crank jack
Electrical System	Split 12 VDC
Backup Battery	12V
Lights / Navigation	US DOT, LED, 12 VDC
Grounding	1 in. grounding stud (1) Grade 5H
Deck Cover	Non-slip Surface
Wheel Chocks	Standard (2)
Fire Extinguisher	ABC
Color	S+R White

OPTIONS

Full vinyl cover
Bullwheel only cover
Payout brake cover
PowerPack option including hydraulic jacks, hydraulic retriever, and Spider® Pilot Line System with independent levelwind.
PowerPack option including hydraulic jacks, and hydraulic retriever
Air Brakes
Galvanized Finish Available
RDG-2100 Rotating Distribution Ground
DG-4100 Running Ground
12 V solar battery charger



BWT-1363H cab interior.

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Blake Abernathy, Public Works Director

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval of Awarding the Four-Drum Puller Bid to Sherman & Reilly in the Amount of $169,166 (Project 25-113)**

DETAILS:

The Town Electric Department is requesting several items of equipment in order to complete their own re-conduct operations. This Four-Drum Puller is apart of those items, and is an essential piece of machinery to re-conduct the power lines.

Town Staff formally advertised through an RFP that this was an intended purchase for the Town, which allowed vendors to submit sealed bids to the Town. This process was followed twice, due there not having a minimum of three bids on the first listing. The second deadline for sealed bids was April 17, 2025 at 2pm. Town Staff held an RFP Bid Opening on April 17, 2025, and received three bids for this equipment. Bids were received from Technology International, Inc. in the amount of $193,874.00, Sherman & Reilly in the amount of $169,166.00, and TSE International, Inc. in the amount of $161,118.00.

I make the recommendation to award the bid to Sherman & Reilly. Sherman & Reilly's equipment provides the safer functions while operating the equipment for the linemen. This equipment has a fully encompassed safety cage around the control cockpit; all functions and controls are performed from the cockpit which eliminates "difference of potential" accidents. Additionally the equipment has a hydraulic safety override emergency brake system. Sherman & Reilly also provides a lifetime warranty for the Town, as long as the Town owns the equipment, and they are based out of Chattanooga, TN if we would need any warranty work completed.

Four-Drum Puller Bid Scoring Sheet **04/17/25 @ 2 pm**

Project 25-113

	#1	#2	#3	Weight	Score
Vendor	Sherman & Reilly	TSE International, Inc	Technology International, Inc.		
Materials	118,420.00	161,118.00	193,874.00		
Labor	50,746.00	-	-		
Other costs	-	-	-		
Total Price	169,166.00	161,118.00	193,874.00		
				0	

TOWN OF LANDIS
North Carolina

REQUEST FOR PROPOSALS (RFP)

Four Drum Puller for Power Line Construction

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

PROPOSAL ATTACHMENTS

1-Four Drum Puller

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name TSE International, Inc.

Representative Name/Title John Martin / General Sales Manager
Address 5301 Shreveport-Blanchard Hwy., Shreveport, LA 71107
Office Phone (318)929-2368 Cell Phone
Website Email https://TSE-International.com

Material Costs	Labor Costs	Other / Note

Total Cost $161,118.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature _____ Date 3/21/25

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name Central Virginia COOP

Address Central Virginia Electric Coop, 800 Cooperative Way Arrington, VA 22922

Contact Name Jay Palmer Phone 434-981-6984

Business Relationship Customer

Business Name Hopkinsville Water Environmental Authority

Address 401 East 9th Street, Hopkinsville, KY 42240

Contact Name Joey Renshaw Phone 270-887-2782

Business Relationship Customer

Business Name Jackson Energy Authority

Address 351 Martin Luther King Jr, Dr., Jackson, TN 38301

Contact Name Charlie Jones Phone 731-988-8512

Business Relationship Customer

Proposal Company Narrative

Company Name TSE International, Inc.

Number of Employees 50-100 Years of Operation 44 Years

Current Clients Lower Colorado River Authority, Alabama Power, Pike , Salt River Project

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

TSE has been successfully designing and manufacturing tension stringing equipment for over 44 years and our equipment is in use worldwide. Our extensive product line provides electric utilities with a wide range of solutions for both aerial and underground projects in electric transmission and communications. TSE specializes in customizing our product line to suit the unique requirements of individual customers throughout the industry.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name Arthur J. Gallagher Rish Management Services, LLC

Agent's Name, Address, Telephone Lauren McWilliams, 470 Ashley Ridge Boulevard, Shreveport, LA 71106, (318)629-8104

Policy Number TB1-B71-171154-014 Effective Date 6/30/2024 - 6/30/2025

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name TSE International, Inc.

Official Address 5301 Shreveport-Blanchard Hwy., Shreveport, LA 71107

Signature & Title General Sales Manager

Date 3/21/25

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be

subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official _____

Name and Title of Firm's Authorized Official JOHN MARTIN GLOBAL SALES MGR.

Date 7/21/25

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes NO N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: TSE International, Inc.
5301 Shreveport-Blanchard Hwy,
Shreveport, LA 71107

As a duly authorized representative, I certify the above information is accurate.

5301 Shreveport-Blanchard Highway
Shreveport, Louisiana, 71107
Telephone 800-825-2402 – Fax 318-929-4853
Website: www.tse-international.com

Proposal # **Q032125BD02**
Date: **03/21/2025**
Valid to: **04/21/2025**

Maddalyn Shuffler
Deputy Town Clerk
Town of Landis
312 S. Main St.
Landis, NC 28088

Dear Ms. Shuffler,

TSE is pleased to offer the following equipment for your review:

1.0 1 ea. **TSE MODEL DP-20-4H TRAILER MOUNTED FOUR DRUM PULLER**

BASIC UNIT DESCRIPTION

Performance
* Continuous torque rating of 31,000 in.-lbs.
* Continuous line pull capacity of 2,000 lbs. at full reel.
* 0 - 3 miles per hour line speed with infinite speed and inching control.
* 3,000 PSI maximum hydraulic pressure at full performance.

Reel
* Four pulling reels with individual clutch control to each reel.
* Each reel is 33" in diameter, 32 1/2" between the flanges with a 12-3/4" core.
* Each reel has a capacity for 6,000 ft. of 1/2" diameter rope.
* Free-wheeling reels with individual bronze disc brakes and manual calipers on each reel for controlling rope payout.
* The reel shaft is mounted on replaceable ball bearings with grease fittings for smooth operation and long life.
* Automatic diamond lead screw levelwind, with a urethane lined sheave, adjustable for individual use with all four reels.

Hydraulic Reel Drive
* The reel drive incorporates a spring applied-hydraulic released holding brake rated at 150% of the maximum rated torque. The brake applies automatically in the event of loss of hydraulic pressure or engine shutdown.
* Manual holding brake control.
* Variable displacement hydraulic pump drive system with infinite speed control.

* Hydraulic oil cooler to ensure uniform heat dissipation.
* 25-gallon hydraulic reservoir with a bottom drain port, oil level and temperature gauges.

Engine

* 35 HP water cooled, diesel, with 12 volt electric starter, keyed ignition, throttle, and oil pressure lights.
* 18 gallon fuel tank with level gauge.
* Heavy duty 12 volt battery.
* Lockable steel battery box.
* Direct mount hydraulic pump drive.
* Engine hour meter.

Control Console

* The console is positioned in the center of the trailer's tongue for optimum operator visibility and safety. It includes:
  - Permanently engraved panel.
  - Hydraulic pressure gauge and decal chart to estimate pounds of actual line pull.
  - Reel direction and speed controller. Includes a positive stop between Pull in and Pay out setting.
  - Adjustable line pull pressure controller.
* Operator's welded wire protective screen (front and overhead).
* Deluxe, adjustable operator's seat and backrest.

Trailer and Undercarriage

* Single axle with 8,000 lbs. capacity, spring leaf type with electric brakes and a break away switch.
* Two breakaway safety chains with hooks.
* Two tires rated for the capacity of the unit.
* LED highway lighting with a dual tail light system, one for turn light and one for brake light.
* Reflective tape as required by NHTSA.
* **One hydraulic tongue and two rear jacks.**
* 3" pintle hitch adjustable to 4 height positions.
* The trailer frame and tongue are constructed of tubular steel and are fully welded.
* Heavy duty checker plate fenders with mud flaps.
* The unit is sandblasted, primed and painted with two coats of paint.

Unit Price Each $161,118.00

OPTIONS INCLUDED IN PRICE

4 ea.	6,000 ft. of 1/2 in. TSE Superline, 12 braid, Easy Splicing type pulling rope installed on each reel under tension. Four different colors.
4 ea.	Pulling Grips installed on item 1.1.
4 ea.	TSE Model SW-13 pulling swivel, 5,000 Lb. working load.
1 ea.	Includes second Levelwind.

Clarifications and Exceptions
Levelwinds are leadscrew type, not hydraulically controlled

Change In Specification:
Design and improvement of TSE's products is a continuous process; we therefore reserve the right to make design improvements differing from this specification after receipt of an order, however, any major changes will be confirmed in writing. Because of our continuous improvement efforts there is also no guarantee by TSE that the equipment quoted in this specification will be identical to any equipment supplied on previous orders even if the model number is the same.

Operator Training:
In an effort to ensure the safe operation of the equipment quoted in this proposal TSE is pleased to offer one training session free of charge provided after delivery at a time mutually convenient for both parties.

Pricing:	For all orders, TSE reserves the right to review the cost of major components a minimum of 90 days prior to completion of the purchase order and adjust pricing accordingly. If a price adjustment is required, TSE will provide the new price in writing.
Taxes:	Any and all applicable taxes and duties are not included.
F.O.B.:	Shreveport, LA
Delivery:	12 – 14 weeks, to be confirmed after acceptance of purchase order.
Terms:	35% deposit, remaining 65% balance TBD at time of order, subject to credit approval. TSE Standard Terms and Conditions of Sale apply, reference form TC082020.

If we can assist you in any way, please let us know.

Sincerely,

Becky Daniel
Inside Sales Coordinator

CC: Payton Harris, Eastern Business Development Manager

The above proposal is subject to the conditions of sale below unless otherwise stated, and in accordance with attached specifications and literature all of which constitute part of this offer. Terms indicated are subject to Credit Department approval.

TC082020

TSE INTERNATIONAL INC.
5301 Shreveport-Blanchard Hwy.
Shreveport, Louisiana, 71107, USA
herein referred to as "TSE"

GENERAL CONDITIONS OF SALE

I. Design and improvement of our equipment is a continuous process. TSE therefore reserves the right to make design improvements after receipt of an order. Photographs and other illustrations or advertising matter represent generally the goods offered, but are not binding on detail.

II. Delivery dates are estimated as accurately as possible, but are not guaranteed in any way unless otherwise specifically provided for in this proposal.

III. Unless otherwise specifically provided for in this proposal, this offer does not include a penalty clause of any kind and acceptance of this offer may not create, by its terms, any such penalty.

IV. Prices quoted herein are based on current duty and currency exchange rates where applicable, and TSE reserves the right to adjust prices to compensate for any changes in these rates, should it be necessary to do so.

V. Notwithstanding any conditions printed on the Purchaser's order form, in accepting this offer the Purchaser agrees to the following TERMS AND CONDITIONS OF SALE which are also detailed on the TSE Acknowledgement and Acceptance of Order Form, and these only will apply unless otherwise specifically provided in this proposal.

TERMS AND CONDITIONS OF SALE

1. **CONTRACT OF SALE** – This order is accepted on, and is subject to, the terms and conditions set forth on the face hereof and below, none of which may be varied or added to except in writing, signed by TSE's duly authorized representative. Any inconsistent matters, terms or conditions in Purchaser's order or confirmation will not be binding on TSE. TSE HEREBY EXPRESSLY OBJECTS TO ANY ADDITIONAL OR DIFFERENT TERMS IN ANY OF PURCHASER'S DOCUMENTS.

2. **COMPLETION** – Unless otherwise provided on the face hereof, time for the completion of manufacture of the machinery and equipment covered by this order (hereinafter called the "Machinery") shall be computed from the date of this Acknowledgement and Acceptance of Order, or from the date on which TSE has received from the Purchaser any information, drawings, data, patterns, or other material which are to be supplied by the Purchaser and are necessary to proceed with the manufacture of the Machinery, whichever is the latest. TSE shall not be responsible for delays in delivery or any failure to deliver due to causes beyond its control including without limitation: acts of God or the public enemy; mobilization; blockades; embargoes; revolution; civil commotions; riots; fires; floods; winds; earthquakes; epidemics; quarantine restrictions; explosions; accidents; other catastrophes; strikes; slow-downs; lock-outs or other labor difficulties; the acts; laws or regulations of any government or governmental authority; federal, state, local or foreign, including safety, health and environmental regulations; unusual weather; delays of sub-contractors or supplies; or inability to obtain shipping facilities, labor raw materials, supplies, fuel or power.

3. **MINIMUM INVOICE** – The minimum single invoice or billing charge is $100.00.

4. **PAYMENTS** – If payment of any part of the purchase price is not made as provided on the face thereof, TSE reserves the right to discontinue manufacture of the Machinery until such payment has been made and to revoke any further credit, whereupon TSE shall have the right to receive payment before any further shipment of Machinery. IN the case of any delay in payment or in establishing agreed security for payment, time for completion may, at TSE's option, be extended for a corresponding period. When any payment is due upon shipment of delivery and shipment is delayed for any cause beyond TSE's control, payment shall be made when the Machinery is ready for shipment. Purchaser agrees that any letters of credit or other guarantee of payment shall be maintained fully valid until final payment has been made. IF PAYMENT IS NOT MADE WITHIN THIRTY DAYS FROM THE DATE OF SHIPMENT UNDER THE TERMS OF THIS AGREEMENT, PURCHASER AGREES TO PAY TSE AN ADDITIONAL SUM EQUAL TO ONE AND ONE-HALF PERCENT (1 ½%) PER MONTH (18% PER ANNUM) OF THE UNPAID PURCHASE PRICE UNTIL PAYMENT IS MADE.

5.

6. **SECURITY INTEREST** – TSE retains a vendor's lien in the Machinery to secure payment in full of the purchase price and any and all other payments which may be or become payable to TSE hereunder. If possession of the Machinery is given to the Purchaser before full payment, the Purchaser shall execute any additional instruments including with our limitation security agreements and financing statements necessary to perfect or maintain TSE's vendor's lien and shall pay or reimburse TSE for all filing or recording. In the event of default in payment of any installment of the purchase price when due, the entire balance thereof shall, at TSE's option, become immediately due and payable, and TSE shall have and may exercise all the rights of a secured party then in force under the laws of the State of Louisiana, United States or such other state as may then have jurisdiction over the Machinery, including without limitation the right to repossess the Machinery with or without legal process.

7. **DELIVERY AND PURCHASE PRICE** – Unless otherwise provided on the face hereof, delivery is to be made f.o.b. TSE's plant, Shreveport, Louisiana, United States. Risk of loss within the meaning of the Sale of Goods Act of the State of Louisiana shall pass to the Purchaser at the stated point of delivery. The purchase price includes ordinary packing for shipment, but if special packing or tie-down and blocking to anchor the machinery to the transport vehicle is required, TSE is to be reimbursed for the cost thereof. Any freight or insurance costs which may be included in the purchase price are based on rates at the date of this Acknowledgement and Acceptance of Order and any increase shall be paid by the Purchaser.

8. **WARRANTIES** – TSE MAKES NO WARRANTY THAT THE MACHINERY SHALL BE MERCHANTABLE OR FIT FOR ANY PARTICULAR PURPOSE NOR DOES IT MAKE ANY OTHER

WARRANTY, EXPRESS OR IMPLIED EXCEPT AS IS EXPRESSLY SET FORTH HEREIN. TSE warrants that the machinery will conform to the description of the face hereof; that it will convey good title thereto; that such goods will be delivered free from lawful security interest or other lien or encumbrance unknown to the Purchaser except as otherwise expressly provided herein. TSE warrants that it will repair f.o.b. its factory, or furnish without charge f.o.b. it factory, a similar part to replace any material in its machinery which, during the earlier of 90 days after the said machinery is put into operation or six months after the date of shipment of the machinery from its plant, is provided to the satisfaction of TSE to have been defective at the time it was sold, provided that all parts claimed defective shall be returned, properly identified, to TSE's factory, charges prepaid.

9. This Warranty to repair applies only to new and unused machinery, which, after shipment from the factory of TSE, has not been altered, changed, repaired or treated in any manner whatsoever unless such alteration, change, repair or treatment has been previously authorized in writing by TSE or has been performed by the authorized service representative of TSE.

10. This Warranty to repair is the only Warranty either express, implied, or statutory, upon which the said machinery is sold; the company's liability in connection with this transaction is expressly limited to the repair or replacement of defective parts, all other damages and warranties, statutory or otherwise, being hereby expressly waived by the Purchaser.

11. TSE shall not be liable for any incidental or consequential damages for breach of any warranty and the Purchaser's sole remedy for breach of any warranty or for any negligence of TSE shall be set forth herein.

12. No representative of TSE has authority to change this Warranty or this contract in any manner whatsoever and no attempt to repair or promise to repair or improve the machinery covered by this contract by any representative of TSE and shall waive any consideration of the contract or change or extend this Warranty in any manner whatsoever.

13. **LIABILITY** – purchaser agrees to hold TSE harmless from, and to indemnify it against, any and all claims, demands, actions, and causes of action of any nature whatsoever, and any expenses incident to the defense thereof, for injury to or death of person and loss of or damage to property arising in connection with the Machinery from the assembly, erection, operation, or use thereof.

14. **TAXES** – All present and future sales, use, excise and similar taxes imposed by any federal, state, local or foreign government which TSE may be required to pay or collect with respect to the Machinery or the sale, transportation, storage, use or consumption thereof shall be for the account of the Purchaser to the extent permitted by law.

15. **NON-CANCELLABLE** – This order is not subject to cancellation or revision by the Purchaser except with TSE's written consent. Cancellation charges will be the greater of:

    i) Fifteen percent (15%) of the total purchase price to cover Sales Administration and handling costs, or

    ii) The cost of all unfinished material and the shop labor with overhead plus component cancellation charges from TSE's vendors if any, plus Engineering costs incurred with overhead, plus all sales and administrative overhead and profit in proportion to the state of completion of the product at the time of cancellation of order. Upon payment to TSE as above provided, all equipment manufactured under the contract will become the property of the Purchaser.

16. **NON-ASSIGNABLE** – Neither this contract nor any interest herein is assignable or transferable without the express written consent of TSE.

17. **WAIVER** – Any waiver of either the Purchaser or TSE of a breach by the other of any provision of this contract of sale shall not be deemed a waiver of future compliance therewith, and all provisions shall remain in full force and effect, notwithstanding any such waiver.

18. **LIMITATION OF ACTION** – No action shall be brought by the Purchaser for any alleged breach by TSE of this Contract of Sale more than one (1) year after the occurrence of the cause of such alleged breach of contract.

19. **APPLICABLE LAW** – This contract shall be governed and construed according to the law of the State of Louisiana, United States.

SPECIAL CONDITIONS FOR EXPORT SALES

A. **EXPORT LICENSE** – If any United States of America regulation requires an export license, TSE will apply for such license at its expense, and Purchaser agrees to furnish all information required for such license application. In case TSE is unable to secure an export license, the contract between the parties shall be cancelled without liability on either party.

B. **IMPORT LICENSE** – If an import license is required, it is to be provided by Purchaser who will see that it remains valid and effective until the import has been completed.

C. **REGULATIONS** – The making and performance of the contract between the parties are subject to compliance with all applicable laws and regulations of the United States Government and agencies thereof, and in case any such law or regulation should prevent TSE from performing or completing the contract in accordance with the terms thereof, then the contract may be terminated by TSE upon written notice to the Purchaser. In such event, TSE and any surety for TSE upon written notice will be relieved of all further obligation to proceed; any guaranty deposit or surety bond furnished by TSE shall immediately be returned to TSE and TSE is to be paid the proportion of the contract price, including profit, represented by the expenditure made and the obligations contracted to the date of such termination. Upon return to TSE of any guaranty deposit or surety bond and payment to TSE as above provided, all equipment manufactured under the contract will become the property of the Purchaser.

REQUEST FOR PROPOSALS (RFP)
Four Drum Puller for Power Line Construction

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

PROPOSAL ATTACHMENTS

1-Four Drum Puller

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name _Sherman & Reilly _____

Representative Name/Title_Cory Lindstrom Orders Specialist _____
Address_400 W 33rd Street Chattanooga TN 37410_____
Office Phone_423-756-5300_____ Cell Phone_423-680-7334_____
Website Email https://www.sherman-reilly.com_sales@sherman-reilly.com_____

Material Costs	Labor Costs	Other / Note
$118,420	$50,746	

Total Cost_$169,166_____

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature_____ Date__3/17/25_____

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name Lubbock Power & Light

Address 402 Municipal Drive Lubbock TX 79403

Contact Name Roy Martinez Phone 806-778-0072

Business Relationship Customer

Business Name Alabama Power Company

Address 600 N 18th Street Birmingham AL 35203

Contact Name Michael McMahon Phone 334-832-3763

Business Relationship Customer

Business Name Georgia Power Company

Address P.O. Box 830961 Birmingham AL 35283

Contact Name Darrell Skelle Phone 706-667-5570

Business Relationship Customer

Proposal Company Narrative

Company Name Sherman & Reilly

Number of Employees 119 Years of Operation 98

Current Clients Sherman & Reilly currently have 3180 active customer accounts ranging from contractors to distributors

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

Established in 1927, Sherman+Reilly remains a leading manufacturer of transmission and distribution equipment for North America's Electric Utility Industry. Through generations of dedicated professionals, and being driven by a commitment to lineman safety, the company continues to design and manufacture stringing equipment that sets the standard, including a complete range of overhead and underground pullers, tensioners, reel trailers, and reel stands.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name Old Republic Insurance Company

Agent's Name, Address, Telephone Lockton Companies, LLC

36575 Briarpark Drive, Suite 700 Houston TX 77042 866-260-3538

Policy Number MWZY 313093 24 Effective Date 5/1/2025

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name Sherman & Reilly

Official Address 400 W 33rd Street Chattanooga TN 37410

Signature & Title _____ Orders Specialist

Date 3-17-25

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official N. French

Name and Title of Firm's Authorized Official Norman French, CFO

3-14-25

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?
Yes N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: ____Not applicable_____

_____

As a duly authorized representative, I certify the above information is accurate.

_____
Signature of Firm's Authorized Official

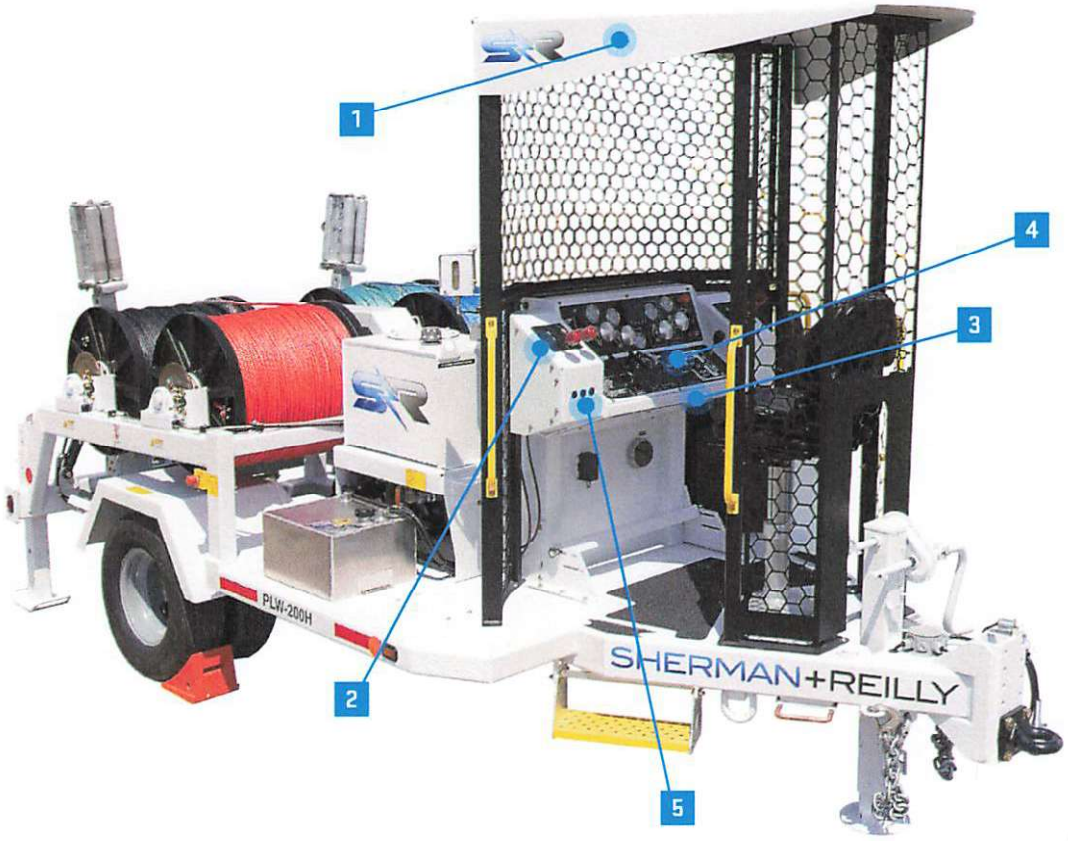
_____
Printed Name and Title of Firm's Authorized Official

_____
Date

SHERMAN+REILLY

PLW-200H PILOT LINE WINDER

2,000 LB. FOUR DRUM PILOT LINE WINDER



1. Safe-Zone® enclosure with Ocu-View™.
2. Remote Reel Engagement.
3. Ergonomic Heritage Control Panel with Adjustable Seat.
4. Synchronized Levelwind Control. (Optional)
5. Supports Radio Install, USB and 12V Charging.

FEATURES

- 2,000 lb. Top of Drum Pulling Capacity.
- Supports the installation of 4 conductors simultaneously with levelwind control option.
- Independent roller assemblies designed for each of the four pilot lines (Verify Option Status – Cost).
- Single Drum Capacity: 6,000 ft. of 7/16 in. Rope.

PLW-200H PILOT LINE W
2,000 LB. FOUR DRUM PILOT LINE WINDER

Sherman-Reilly.com

SPECIFICATIONS

Maximum Pulling Capacity	2,000 lb. rated at top of drum
Max. Line Speed	4 mph, top of drum
Reel Capacity	6,000 ft. of 7/16" PE12 rope
Drive System	Hydraulic motor, chain and sprocket
Engine	Turbocharged, Tier-4 Final, diesel, 49 Hp, water-cooled Kubota®
Fuel Capacity	13 gallons
Hydraulic Fluid	ISO Grade 32
Hydraulic Reservoir	25 Gallons
Payout Brake	Manually controlled disc brakes, 12" diameter disc, bronze
Levelwind	Hydraulic joystick controlled (2)
Operator's Safety Enclosure	Safe-Zone® with Ocu-View™ open-air enclosure
Frame Construction	Steel tubing, continuous weld
Length (overall, nom.)	17 ft. 3 in.
Width (overall, nom.)	8 ft. 6 in.
Height (overall, nom.)	9 ft. 1 in.
Weight (w/ rope)	10,900 lb.
GVWR	11,500 lb.
Suspension	Leaf-spring
Axle Configuration	Single
Wheel Configuration and Tires	Dual 235/85R 16LRG; 8-6.5
Brakes (Trailer)	Electric, with safety break-away switch
Towing Attachment	3 in. pintle eye, with two safety chains and hooks

Tie Downs (4)	5/8 in. dia. steel D-rings
Bumper (SS/CS) Jacks	Manual (2), drop and pin with optional Hydraulic with galvanized shoe (2)
Tongue Jack	Manual, 2 speed hand crank with optional Hydraulic with galvanized shoe (1)
Electrical System	12 VDC
Battery	12 Volt, group 27
Lights / Navigation	US DOT, LED, 12 VDC
Grounding (4)	3/4 in. dia. copper-clad steel loops (4)
Wheel Chocks and Holders	Standard
Fire Extinguisher	ABC
Drum Covers	Vinyl
Color	S+R White or Galvanized

OPTIONS

Tongue Extension
Light Bar, 12V and USB Charger
Solar Charger
Galvanized Finish
Drum Covers
Hydraulic Jacks
Air Brakes

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*Specifications are subject to change

SHERMAN+REILLY

Quote: 13154

TOWN OF LANDIS
312 S. Main Street
LANDIS NC 28088

FormAddress-EmailURI:	sales@sherman-reilly.com
Date:	Feb 11, 2025
Your Reference:	PLW-200H
Valid To:	May 5, 2025
Request Date:	Jun 26, 2025
Customer Number:	1015876
Contact:	6408 UTILITY SERVICE AGENCY
E-Mail:	sales@sherman-reilly.com

Dear Sir or Madam,
Thank you for your interest. We offer the following items:

Line	Product	Description	Quantity	Net Price	Net Value
30	623173	PLW-200H;FINAL ASSY;3HJ;W/ ROPE+GRIP+SWVL	1 Each	169,166.00 USD / 1 Each	169,166.00 USD
	List Price		169,166.00 USD / 1 Each		169,166.00 USD
	State sales tax (%)		4.75 %		8,035.39 USD
	County sales tax (%)		2.25 %		3,806.24 USD
40	610719	COVER;VINYL;PLW-200X;DRUM	4 Each	331.00 USD / 1 Each	1,324.00 USD
	List Price		331.00 USD / 1 Each		1,324.00 USD
	State sales tax (%)		4.75 %		62.89 USD
	County sales tax (%)		2.25 %		29.79 USD

Total Item Net Value		170,490.00 USD
State sales tax (%)	4.75 %	8,098.28 USD
County sales tax (%)	2.25 %	3,836.03 USD
Total		**182,424.31 USD**

Payment Terms: 30 days net
Incoterms: FOB Origin, Freight Prepaid & Added

QUOTE DOES NOT INCLUDE SHIPPING AND HANDLING.

DELIVERY LEADTIME IS CONTINGENT ON FIRST RECEIPT OF PURCHASE ORDERS RELATED TO ACTIVE QUOTES IN-PROCESS. S+R WILL EITHER CONFIRM OR PROVIDE AN UPDATED DELIVERY LEADTIME AT THE TIME OF PURCHASE ORDER RECEIPT.

Sherman & Reilly, Inc.
400 West 33rd Street
Chattanooga, TN 37410 USA
www.sherman-reilly.com

SHERMAN+REILLY

Quote: 13154

Quote Number: 13154

Sherman + Reilly Terms and Conditions

Prices - Prices are subject to change without notice. The prices quoted are those in effect on the date of the quotation and will remain in effect for forty-five (45) days from the date of the quote. Prices are Ex-works Sherman + Reilly, Inc. (S+R) dock unless otherwise specified. Prices do not include, and Buyer shall pay, all costs and expenses incident to shipment and handling of products from point of delivery of the products by S+R to final destination.

Payment - Where S+R extends credit to the Buyer, terms of payment shall be net thirty (30) days from the invoice date in US currency unless specified otherwise on the quote. Unless otherwise specifically agreed to in writing, payment from Buyer shall not be contingent on payment or financing from a third party. Buyer is also responsible for any sales, use or excise or similar taxes, duties, or levies now or hereafter enacted or imposed by governmental authority on the sale, delivery and or use of the products sold by S+R. Buyer is responsible to provide a valid tax exemption certificate with their purchase order to avoid such tax being charged. If, in S+R's judgment, Buyer's financial condition does not justify the terms of payment specified, S+R may cancel delivery of the products unless the Buyer immediately pays for all products that have been delivered and pays in advance for other products that are due to be delivered. S+R retains the right to impose late fee of the lesser of 0.277% or the maximum allowed by law per day for all payments that are late.

Title and Delivery - All shipments of goods shall be delivered F.O.B. origin, and title and liability for loss or damage thereto shall pass to the Buyer upon delivery to the Buyer's carrier. Buyer shall be liable for costs of insurance and transportation, taxes and any other expenses incurred, or licenses required at destination. Shipping dates are approximate only. S+R shall not be liable for any loss or expense for failing to meet a specific shipping date. Buyer hereby grants a lien and security interest in products delivered until payment is received in full. If Buyer requests S+R hold products until Buyer arranges transportation, Buyer agrees to assume ownership of products on the date the products were ready for shipment.

Contingencies and Force Majeure - S+R shall not be liable for any delay in delivery caused by any contingency beyond the control of either S+R or S+R's suppliers, including, but not limited to, war, sabotage, insurrection, act of any government or any agency, judicial action, labor dispute, accident, insurance loss or other act of GOD.

Cancellation - Orders for any products submitted by Buyer and acknowledged by S+R cannot be canceled for any reason.

Inspection - Buyer, at its option and expense, may inspect products for compliance to its purchase order prior to shipment.

Limitation of Liability - Buyer shall defend, indemnify and hold harmless S+R, its employees and agents from and against all liabilities, claims, damages, losses and expenses for injury to any person or damage to real or tangible personal property which directly or indirectly arises out of the acts or omissions of Buyer, the breach of any agreement between the parties or the misuse, unsafe, negligent, or inappropriate use of any products sold by S+R to Buyer.

Non-Waiver of Default and Collection Rights - In the event of any default by the Buyer, S+R may invoke any remedy provided by law or by terms of this quote and may decline further shipments.

Applicable Law and Forum - All matters arising out of or relating to this quote shall be governed by and in accordance with the laws of the State of Tennessee, without giving effect to principles of conflict of laws. Any legal suit, action or proceeding arising out of this quote shall be instituted exclusively in the state or federal courts located in Hamilton County, Tennessee.

LIMITED WARRANTY - Please refer to www.sherman-reilly.com for all warranty terms.

Complete Agreement - Any purchase from S+R shall be solely governed by the terms and conditions of this Quote. Any terms or conditions introduced by Buyer either directly, indirectly by way of reference or otherwise, and whether as part of a purchase order, acknowledgment, email, or other means are hereby explicitly rejected and shall not apply.

Sherman & Reilly, Inc.
400 West 33rd Street
Chattanooga, TN 37410 USA
www.sherman-reilly.com

TOWN OF LANDIS
North Carolina

REQUEST FOR PROPOSALS (RFP)
Four Drum Puller for Power Line Construction

Town of Landis, North Carolina

Issued: April 03, 2025

Response Due: April 17, 2025

PROPOSAL ATTACHMENTS

1-Four Drum Puller

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name Technology International, Inc.

Representative Name/Title Rifat Habib, Business Development Executive
Address 1331 South International Pkwy, Suite 2251. Lake Mary. FL 32746 USA
Office Phone (407) 359-2373 Cell Phone
Website Email tii@tii-usa.com

Material Costs	Labor Costs	Other / Note

Total Cost $193,874.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature Date 04/15/2025

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name Horry County Schools, SC

Address 335 Four Mile Rd. Conway SC 29526

Contact Name Vicki Williams Phone 843/488-6938

Business Relationship Supplied a 15-ton rooftop unit

Business Name U.S. Navy

Address China Lake, CA 93555

Contact Name Terryl Mitchell Phone 760-939-1998

Business Relationship Supplied a water chiller

Business Name Massachussets Water Resource Authority (MWRA)

Address Boston, MA 02129

Contact Name Allan Cassasa Phone

Business Relationship Supplied a 5 Ton Split System HVAC Unit

Proposal Company Narrative

Company Name Technology International, Inc

Number of Employees 10 Years of Operation 32

Current Clients

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

See attached Capabilities Statement

Technology International, Inc.
1349 South International Pkwy, Suite 2411
Lake Mary, FL 32746
Tel: (407) 359-2373
Fax: (407) 359-2372
E-mail: tii@tii-usa.com
Website: www.tii-usa.com

Capability Statement

Core Competencies

Technology International, Inc. (TII) is a minority owned small business, established over 27 years ago, in 1992. TII exclusively serves government customers across the United States in the Federal, State, and Local Government Sectors. We primarily supply equipment as well as customize equipment for supply to clients with unique technical requirements. Although TII is able to supply a wide variety of products and equipment, below are some of our more concentrated lines:

- HVAC
- Railway Equipment
- Material Handling Equipment (Forklifts, Scissor Lifts, Pallet Jacks)
- Trailers
- Custom Shipping Containers
- Laser Engravers
- Pumps and Motors
- Toolshop Equipment
- Generators and Power Supply

Differentiators

Technology International, Inc. having served government clients since its inception has learned the ins and outs as well as the intricacies of government contracting. We provide the most competitive and cost effective solution based on our clients specialized needs. On a regular basis, TII assists Government Agencies in creating the project from scratch prior to being put out for bid. We understand the particularities and differences involved in serving private and government clients.

Past Performance

TII serves Federal, State, and Local Government Customers across the U.S. Our clientele are located in 49 of the 50 states. Just some of our customers are listed below:

- US Army, Coast Guard, Navy, Air Force
- Dept of Interior, Fish & Wildlife
- NASA
- National Parks
- State Governments (49/50 states are current customers)
- State agencies (DOT, DOC, etc)
- Counties
- Municipalities
- Etc.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name See attached Liability and Worker's Compensation Documents

Agent's Name, Address, Telephone _____

_____

Policy Number _____ Effective Date _____

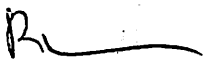
Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name Technology International, Inc.

Official Address 1331 South International Parkway, Suite 2251, Lake Mary, Florida 32746

Signature & Title  Business Development Executive

Date 04/15/2025

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

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[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official

Name and Title of Firm's Authorized Official Rifat Habib, Business Development Executive

Date 04/15/2025

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes NO N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: Technology International, Inc.

1331 S. International Parkway, Suite 2251, Lake Mary, FL 32746

As a duly authorized representative, I certify the above information is accurate.

Signature of Firm's Authorized Official

Rifat Habib, Business Development Executive

Printed Name and Title of Firm's Authorized Official

4/15/2025

Date

TECHNOLOGY INTERNATIONAL

Technology International, Inc.
1331 South International Parkway, Suite 2251
Lake Mary, FL 32746
Tel: (407) 359-2373
Fax: (407) 359-2372
E-mail: tii@tii-usa.com
Website: www.tii-usa.com

Equipment Proposal

Description: Four Drum Puller for Power Line

Agency: Town of Landis

Attention: Maddalyn Shuffler

TII Ref: **TII/NC/0425/43903**

Date: 04/15/2025

In response to your quote request for Four Drum Puller for Power Line, Technology International, Inc. is pleased to submit the following for consideration:

ITEM NO.	QTY	DESCRIPTION/ MODEL NO.	UNIT PRICE	EXTD. PRICE
1	1	PLW-200H; Pilot Line Winder FINAL ASSY; 3HJ; W/ROPE+GRIP+SWVL	$193,874.00	$193,874.00
See attached data sheets				
Total.....$193,874.00				

Warranty: Manufacturer's Standard warranty applies.

Delivery:

- Estimated delivery is **5-6 months** after receipt of order and approved submittal.
- *Please note, there may be unanticipated disruptions and delays in the supply chains globally, for parts, components, equipment and internal manufacturing services such as engineering, production allocation, and logistics. This may result in manufacturing & delivery delays out of our control. We will do our best to communicate all such impacts and reduce the effects of any such delays.*
- All delivery dates quoted are subject to manufacturer's confirmation at time of order.
- Submittal data will be provided for approval after receipt of order (if applicable)
- Customer to provide equipment and personnel to unload

- TII will provide MSO at time of payment confirmation. Customer is responsible for all titling and registration of trailer (If Applicable)

Freight: Included to Landis, NC 28088 USA.

Quote Validity: 30 days.

Payment Terms: NET 30
Prompt Payment discount: 1/4 % 10 days

Technology International, Inc. Corporate data:
We are a small business and our Tax Payer Identification Number (TIN): 650342335. The above price quoted does not include any sales, excise or similar taxes.

We trust that this proposal will meet your requirements and we look forward to hearing from you.

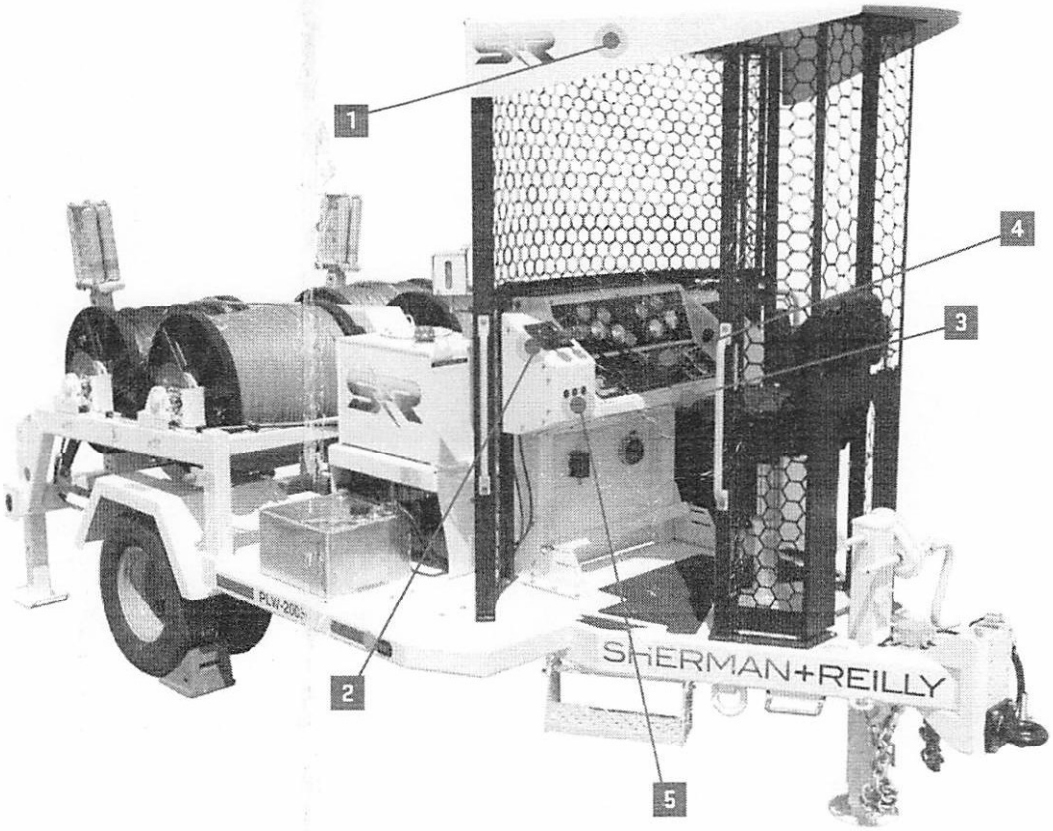
If you have any questions or need more information, please contact us by phone at 407-359-2373, fax at 407-359-2372 or email us at tii@tii-usa.com

Respectfully submitted,

Rifat Habib
Business Development Executive
Technology International, Inc.

PLW-200H PILOT LINE WINDER

2,000 LB. FOUR DRUM PILOT LINE WINDER



1. Safe-Zone® enclosure with Ocu-View™.
2. Remote Reel Engagement.
3. Ergonomic Heritage Control Panel with Adjustable Seat.
4. Synchronized Levelwind Control. (Optional)
5. Supports Radio Install, USB and 12V Charging.

FEATURES

- 2,000 lb. Top of Drum Pulling Capacity.
- Supports the installation of 4 conductors simultaneously with levelwind control option.
- Independent roller assemblies designed for each of the four pilot lines.
- Single Drum Capacity: 6,000 ft. of 7/16 in. Rope.

PLW-200H PILOT LINE WINDER

2,000 LB. FOUR DRUM PILOT LINE WINDER

SPECIFICATIONS

Maximum Pulling Capacity	2,000 lb. rated at top of drum
Max. Line Speed	4 mph. top of drum
Reel Capacity	6,000 ft. of 7/16" PE12 rope
Drive System	Hydraulic motor, chain and sprocket
Engine	Turbocharged, Tier-4 Final, diesel, 49 Hp, water-cooled Kubota*
Fuel Capacity	13 gallons
Hydraulic Fluid	ISO Grade 32
Hydraulic Reservoir	25 Gallons
Payout Brake	Manually controlled disc brakes, 12" diameter disc, bronze
Levelwind	Hydraulic joystick controlled (2)
Operator's Safety Enclosure	Safe-Zone® with Ocu-View™ open-air enclosure
Frame Construction	Steel tubing, continuous weld
Length (overall, nom.)	17 ft. 3 in.
Width (overall, nom.)	8 ft. 6 in.
Height (overall, nom.)	9 ft. 1 in.
Weight (w/ rope)	10,900 lb.
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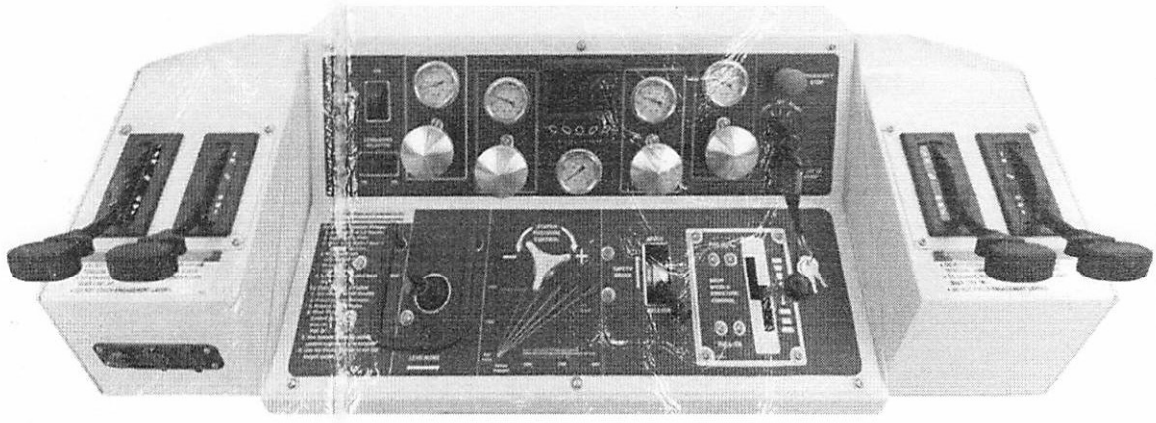
Suspension	Leaf-spring
Axle Configuration	Single
Wheel Configuration and Tires	Dual 235/85R16LRG; 8-6.5
Brakes (Trailer)	Electric, with safety break-away switch
Towing Attachment	3 in. pintle eye, with two safety chains and hooks

Tie Downs (4)	5/8 in. dia. steel D-rings
Bumper (SS/CS) Jacks	Manual (2), drop and pin with optional Hydraulic with galvanized shoe (2)
Tongue Jack	Manual, 2 speed hand crank with optional Hydraulic with galvanized shoe (1)
Electrical System	12 VDC
Battery	12 Volt, group 27
Lights / Navigation	US DOT, LED, 12 VDC
Grounding (4)	3/4 in. dia. copper-clad steel loops (4)
Wheel Chocks and Holders	Standard
Fire Extinguisher	ABC
Drum Covers	Vinyl
Color	S+R White or Galvanized

OPTIONS

Tongue Extension
Light Bar, 12V and USB Charger
Solar Charger
Galvanized Finish
Drum Covers
Hydraulic Jacks
Air Brakes
Know+Go Instructional Video System



*Specifications are subject to change

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Blake Abernathy, Public Works Director

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval to Award the Transformers Bid to Sunbelt Solomon in the Amount of $35,400 (Project 25-112)**

DETAILS:

Town Staff are requesting authorization to purchase Transformers for 12kV conversion stock. These transformers will be utilized as the 12kV project continues to advance, and come closer to completion.

Town Staff formally advertised through an RFP that this was an intended purchase for the Town, which allowed vendors to submit sealed bids to the Town. This process was followed twice, due there not having a minimum of three bids on the first listing. The second deadline for sealed bids was April 17, 2025 at 2pm. Town Staff held an RFP Bid Opening on April 17, 2025, and received three bids for this equipment.

Bids were received Technology International, Inc in the amount of $73,200.00, Tarheel Electric Membership Association, Inc in the amount of $71.836.00, and Sunbelt Solomon in the amount of $35,400.00. I make the recommendation to award the contract to Sunbelt Soloman in the amount of $35,400.00. According to Sunbelt Soloman, the units have an expected shipment of two to three weeks from contract award and will carry a three-year warranty.

Transformers Bid Scoring Sheet **04/17/25 @ 2 pm**
Project 25-112

	#1	#2	#3	#4	Weight	Score
Vendor	TEMA	Sunbelt Solomon	Technology International, Inc.			
25 KVA Pads (2)	6,096.00	4,800.00	7,000.00			
50 KVA Pads (2)	7,910.00	7,000.00	8,700.00			
25 KVA Poles (10)	22,180.00	10,550.00	26,500.00			
50 KVA Poles (10)	35,650.00	13,050.00	31,000.00			
Total Price	71,836.00	35,400.00	73,200.00			
					0	

REQUEST FOR PROPOSALS (RFP)
Transformers

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

PROPOSAL ATTACHMENTS

1-Transformers

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name Sunbelt Solomon

Representative Name/Title Matthew Holmes / Utilities Account Manager & BDM
Address 1922 MLK Jr. Drive, Temple, TX 76504
Office Phone 888-687-1487 Cell Phone 352-514-1566
Website Email www.sunbeltsolomon.com/Matt.Holmes@sunbeltsolomon.com

Material Costs	Labor Costs	Other / Note
25kVA Polemount @ $1,055.00 Each	N/A	(10) x $1,055 = $10,550.00
50kVA Polemount @ $1,305.00 Each	N/A	(10) x $1,305.00 = $13050.00
25kVA 1PH Padmount @ $2,400.00 Each	N/A	(2) x $2,400 = $4,800.00
50kVA 1PH Padmount @ $3,500.00 Each	N/A	(2) x $3,500 = $7,000.00

* SEE (INCLUDED) ATTACHED QUOTE FOR DETAILS.

Total Cost $35,400.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature _____ Date 03/18/2025

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name City of Concord Electric Systems

Address 635 Alfred Brown Jr Ct SW, Concord, NC 28025

Contact Name Blake Burris / Ty Barbee Phone (704) 920-5555

Business Relationship Sales (1PH, 3PH Padmount, polemount), repair, recycle, and surplus purchasing

Business Name City of Kings Mountain

Address 1013 N. Piedmont Ave. Kings Mountain, NC 28086

Contact Name Todd Parker Phone 704-730-2125

Business Relationship Sales (1PH & 3PH Pads, polemounts) purchasing

Business Name Clayton Public Power

Address 653 NC-42, Clayton, NC 27520

Contact Name Kristie Germano Phone 919-553-1530

Business Relationship 1PH Padmount Sales

Proposal Company Narrative

Company Name Sunbelt Solomon

Number of Employees 750+ Years of Operation 100

Current Clients IOU's, Coops, Municipalities, Commercial & Industrial, renewable energy

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

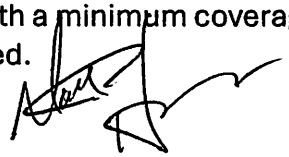
Backed by over 100 years of combined experience, Sunbelt Solomon offers an unmatched ability to provide comprehensive, configured solutions for utility, industrial, and commercial applications.

We sell both new and REMAN transformers to help fill any inventory gaps you may have, and we offer surplus and scrap purchasing, repairs, and field services for your utilities related equipment including 1PH and 3PH Padmounts, polemounts, and substation transformers, reclosers (OCR's & vacuum), regulators, and switchgear. We also have a rental division to help with temporary power needs or emergency outages. We run regular route trucks throughout NC, so we can schedule pickups and deliveries as needed

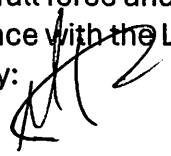
Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage, naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.



- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:



Insurance Company Name **__**COI Provided at time of Bid Award.**__

Agent's Name, Address, Telephone_____

WE WILL PROVIDE COI AT TIME OF AWARD

Policy Number _____Effective Date_____

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name SUNBELT SOLOMON / MATT HOLMES

Official Address 1922 MLK JR. DRIVE TEMPLE, TX 76504

Signature & Title UTILITIES ACCOUNT MGR.

Date 03/18/2025

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

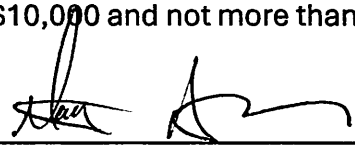
If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by

the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official 

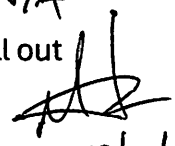
Name and Title of Firm's Authorized Official MATT HOLMES UTILITIES ACCT. MGR.

Date 03/18/2025

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm → N/A

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.



Firm is proposed as: Prime firm Sub-firm N/A 03/18/2025

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes N/A (firm is qualified under one of the two methods above)

Sunbelt Solomon remanufactured (REMAN) transformers are BABA Certified
Consult with your sales rep to confirm if this applies to the unit(s) within your quote

Ian Kenner
Landis Light & Power Dept
ikenner@townoflandisnc.gov

Matt Holmes
Account Manager - Southeast
matt.holmes@sunbeltsolomon.com | +1 3525141566

PRODUCT	QTY	EACH
Single Phase Pole Mount 25 KVA	10	$1,055

KVA: 25 @ 65°C | 60Hz | Impedance: Standard
HV: 12470GrdY/7200 (95 KV BIL) | LV: 120/240 (30 KV BIL)
Primary Taps: No Taps

Conventional Style
Primary Bushing: 1) Cover Mount
1) 10 KV Live Front Arrester
Secondary Bushings: 3) Side Mount
DOUBLE Set of Hangers
Pressure Relief Valve
Non-PCB Mineral Oil

PRODUCT	QTY	EACH
Single Phase Pole Mount 50 KVA	10	$1,305

KVA: 50 @ 65°C | 60Hz | Impedance: Standard
HV: 12470GrdY/7200 (95 KV BIL) | LV: 120/240 (30 KV BIL)
Primary Taps: No Taps

Conventional Style
Primary Bushing: 1) Cover Mount
1) 10 KV Live Front Arrester
Secondary Bushings: 3) Side Mount
DOUBLE Set of Hangers
Pressure Relief Valve
Non-PCB Mineral Oil

PRODUCT	QTY	EACH
Single Phase Pad Mount 25 KVA	2	$2,400

KVA: 25 @ 65°C | 60Hz | Impedance: Standard
HV: 12470GrdY/7200 (95 KV BIL) | Loop Feed | LV: 240/120 (30 KV BIL)
Primary Taps: No Taps

Primary Bushings: 2) 200A Dead Front Wells & 15 kV Inserts
Secondary Bushings: 3) Spade Z-Bars
Bayonet Fusing
Pressure Relief Valve
Non-PCB Mineral Oil

PRODUCT	QTY	EACH
Single Phase Pad Mount 50 KVA	2	$3,500

KVA: 50 @ 65°C | 60Hz | Impedance: Standard
HV: 12470GrdY/7200 (95 KV BIL) | Loop Feed | LV: 240/120 (30 KV BIL)
Primary Taps: No Taps

Primary Bushings: 2) 200A Dead Front Wells & 15 kV Inserts
Secondary Bushings: 3) Spade Z-Bars

Bayonet Fusing
Pressure Relief Valve
Non-PCB Mineral Oil

*** **Notes & Clarifications to Bid Specifications:**
~ Manufacturer's standard Test Reports will be available at time of completion.
**Our testing procedures are shown below for your review. Any testing not listed in standard testing process will NOT be included.
~ Losses are Estimated only. Sunbelt Solomon will not accept loss evaluated penalties or liquidated damages of any kind.
-This is standard for us based on REMAN equipment
~ REMAN units are exempt from DOE Efficiency requirements.
~ REMAN units will NOT be UL listed or labeled.
Additional exceptions:
- Units may be AL, Copper, or mixed winding depending on the REMAN inventory available at time of shipment.

Main Electrical Testing Information:
Single Phase Pad Mounted transformers & Polemounts are tested according to ANSI/IEEE C57.12.00 Distribution, Transformer Standards except for Impulse Test Requirements.

Pole Standard Tests:
1. Turns Ratio/Phase Displacement
2. Excitation and Core Loss
3. Impedance and Load Loss
4. Applied Potential (Dielectric Stress Test where AC voltage is applied at Insulation Levels for Distribution Transformers for 1 minute)
5. Induced Potential (Dielectric Stress Test in which

Single Phase Pad Standard Tests:
1. Turns Ratio/Phase Displacement
2. Excitation and Core Loss
3. Impedance and Load Loss
4. Applied Potential (Dielectric Stress Test where AC voltage is applied at Insulation Levels for Distribution Transformers for 1 minute)
5. Induced Potential (Dielectric Stress Test in which transformer is induced at voltage levels for Distribution Transformers for 7200 cycles)

All REMAN Units are Completely Reconditioned to Nameplate Specifications

Ask your sales rep about volume discounts

Destination: Landis, NC | **FOB:** Origin | **Shipping & Handling:** Prepaid & Allowed
Shipment: 2-3 Weeks ARO | **Warranty:** 3 Years | **Terms:** Net 30 with approved credit.

Offer to sell valid for 30 days. Price is subject to re-evaluation after 15 days. Units subject to availability.

Please note any changes to the specifications on this quotation form and reference the quotation number on your Purchase Order. Sunbelt Solomon ("Supplier") will use your Purchase Order to proceed with manufacturing when terms and conditions are finalized. Please note that changes made after the manufacturing process begins may result in additional charges and potential delays in production. Production of units that are contingent on the approval/receipt of drawings will begin the manufacturing process after the final sign off on the specified drawings by the customer. Please contact your sales representative for the estimated drawing lead time associated with this quote.

All sales, rental and services are subject to Supplier's Terms and Conditions for Sales and Rentals of Equipment and/or Services ("Terms and Conditions") unless otherwise mutually agreed in writing by officer of Supplier as evidenced by such

officer's signature. Acceptance of a Buyer purchase order by Supplier-does not constitute acceptance of Buyer terms and conditions. As orders are time sensitive and it is cost prohibitive to review and negotiate terms and conditions between parties, Supplier Terms and Conditions apply to quotes/orders: 1) with a value before tax of $25,000 or less, 2) emergency services or services completed before issuance of a purchase order, and 3) rush orders for sales and rental that are to ship within three (3) days regardless of submission of terms and conditions by Buyer. If the Quotation is for Company to perform evaluation services on Customer-owned equipment (e.g. for Company to determine how/if the piece of equipment failed and/or whether it can be repaired), then the provisions of terms and conditions will apply which include (among other provisions) risk of loss remaining with Customer and Company only being liable for damage to this equipment to the extent of its gross negligence or willful misconduct. In no event does Supplier accept consequential damages or agree to Prime/Owner contract terms and conditions.

Price does not include tax. If applicable, tax will be added to the invoice. If order is tax exempt, please provide a copy of your exemption certificate. Unit(s) quoted are for normal service conditions as defined by ANSI/IEEE Standards. Notify Supplier at time of quotation should the unit(s) be subject to harmonics, motor starting, shovel duty, or other special service conditions.

Schedules

All Delivery dates are estimates and under no circumstances does Company guarantee date of delivery. Company shall not be responsible or liable for any damage or loss which occurs during transportation and/or shipment of the Equipment. Company is not liable or responsible for any costs of Customer caused by any delays in transportation or delivery.

Company reserves the right to manufacture and ship any items in advance of the acknowledged shipping schedule, unless expressly forbidden by the Customer at the time of the order entry.

Cancelation or Revision of Order

Any Purchase Order may be cancelled or revised by Customer only upon written approval by an authorized representative of the Company, and at the Company's sole discretion. Should Company approve cancellation or revision of a Purchase Order, Customer shall pay the cancellation or revision charges specified in said approval. Cancellation or revision charges will include expenses previously incurred, commitments made pursuant to or in reliance upon such Purchase Order, whether or not such commitments are legally binding on Company, and any other factors considered relevant by Company. In the event that Company does not approve cancellation or revision, Customer shall remain liable to Company for the full price of the Equipment, Rental and/or Services ordered.

Cancellation charges are calculated for each unit cancelled per its individual status.

Standard Cancellation Charges:

Cancellation Charges:	% of PO Price
Upon Purchase Order acceptance	25
After materials are ordered	50
After production begins for Equipment	75
Once production is complete for Equipment	100

Company reserves the right to re-quote both price and lead time for any request to revise an order. If it is determined that a revision will incur an additional revision charge, charges are calculated for each unit revised per its individual status.

Standard Revision Charges:

Revision Charges:	% of Selling Price
Before Engineering Review / Scheduling	0
Before Production Begins	35
After Production Begins	100

Sunbelt Solomon Quotation Terms and Conditions for Sales and Rentals of Equipment and/or Services

1. APPLICABILITY OF THESE TERMS AND CONDITIONS. These Quotation Terms and Conditions for Sales and Rentals of Equipment and/or Services ("**Terms**") shall apply to every Quotation with a dollar value of $25,000.00 or less ("**Threshold**") since it is cost-prohibitive for Sunbelt Solomon Services, LLC ("**Company**") to review and negotiate terms and conditions with the party ("**Customer**") purchasing/renting the equipment ("**Equipment**" when a provision is applicable to both sale or rental equipment, or "**Sale Equipment**" or "**Rental Equipment**" when a provision applies only to that specific type of equipment) and/or purchasing the services ("**Services**") set forth above in the Quotation. These Terms constitute an offer to Customer that can only be accepted by agreeing to every term and condition contained herein as evidenced by Customer's signature below. Company hereby expressly notifies Customer that any term, provision, or condition in conflict with, in addition to, or in modification of these Terms (no matter if issued by Company or Customer (individually a "**Party**" and collectively the "**Parties**") prior to or after the execution of these Term) are hereby rejected and shall not be binding upon Company unless such term, provision, or condition is accepted in a signed writing by an authorized officer of Company which references the specific provision of these Terms that is superseded or modified and specifically references how it supersedes or modifies that specific provision of these Terms, and Company's failure to object to any term or condition contained in any communication or documents between the Parties shall not be deemed a waiver of any provision of these Terms. Should Customer be hiring Company to provide Equipment or Services to a third party to which Customer has a contract ("**Prime Contract**"), none of the terms or conditions of the Prime Contract shall apply to Company. Additionally, if the Quotation has dollar value over the Threshold, these Terms shall apply unless the Parties have entered into a separate, executed agreement ("**Master Agreement**") which specifically acknowledges that it supersedes these Terms.

2. OFFER/ACCEPTING THE QUOTATION. The Parties are executing this Quotation to evidence the Customer's acceptance of these Terms as set forth in Section 1 above that will apply should the Customer accept the offer set forth by Company in this Quotation by issuing a purchase order ("**Purchase Order**") for the Equipment and/or Services or by Company issuing an Order Authorization or other document that is accepted by Customer. Once Customer executes this Quotation, the Terms shall apply to every single Purchase Order issued by Customer for Equipment and/or Services to be provided by Company unless and until the Parties enter into a Master Agreement for such Equipment and/or Services that supersede these Terms as stated in Section 1 above. The offer set forth in the Quotation is valid for thirty (30) days from Company's issuance of this Quotation. The Equipment is subject to availability. Customer shall note any changes to the specifications on this Quotation and reference the quotation number on your Purchase Order. Company will use your Purchase Order as order confirmation and proceed with manufacturing the Equipment. Please note that changes made after the manufacturing process begins may result in additional charges and potential delays in production. Production of units that are contingent on the approval/receipt of drawings will begin the manufacturing process after the final sign off on the specified drawings. Please allow up to four (4) weeks for the receipt of requested preliminary, construction, or approval drawings from the Purchase Order submittal date.

3. PRICES. The price(s) set forth in the Quotation are subject to re-evaluation by Company after fifteen (15) days from Company's issuance of this Quotation if not accepted by Customer by issuing a Purchase Order. All prices are exclusive of any present or future sales, revenue, or excise tax, value added tax, turnover tax, import or export duty, or any other tax applicable to the manufacture and sale or Rental of any Equipment or the provision of Services. Such taxes shall be paid by Customer.

4. PAYMENT TERMS. The net amount due shall be paid in full within thirty (30) days of the invoice date. Amounts unpaid after the due date shall accrue interest of one percent (1%) per month. Company reserves the right to require payment in advance, a deposit or C.O.D. If Company requires a prepayment, Customer shall have five (5) business days from notice of such prepayment date (whether listed in this Quotation, a Purchase Order or otherwise) to notify Company in writing if Customer disagrees with such prepayment date, in which case the Parties shall work in good faith to come to an agreement on the prepayment date. If Customer does not object to the prepayment date within this period of time, Customer shall be assumed to have agreed to this date. If Customer does not make the required prepayment by the required prepayment date, Customer will be considered to have cancelled the Purchase Order, in which case the cancellation charges set forth in Section 5 shall apply. If partial shipments are made, payments shall become due in accordance with the designated terms upon submission of invoices. To secure the purchase price of the Sale Equipment and of any other items or services purchased by Customer from Company and any other amounts due by Customer to Company, Company hereby retains a security interest in, and Customer grants to Company a security interest in, the Sale Equipment and any other items purchased by Customer from Company.

5. CANCELLATION OR REVISIONS. Any Purchase Order or part thereof that is cancelled by Customer after the acceptance of the applicable Purchase Order for other than an unremedied default of Company will be subject to the cancellation charges set forth below, unless otherwise agreed and reflected on the Purchase Order. The cancellation charges relate to the specific line-item amount to be paid under the applicable Purchase Order. The Parties agree that these cancellation charges are reasonable, and that the amounts of these cancellation charges have been agreed upon and fixed hereunder because of the difficulty of ascertaining the exact amount of damages and costs that will be actually incurred by Company should Customer cancel a Purchase Order or part thereof.

(a) Equipment

Cancellation Charges:	% of PO Price
Upon Purchase Order acceptance	25
After materials are ordered	50
After production begins for Equipment	75
Once production is complete for Equipment	100

New Equipment procured from original equipment manufacturers (OEMs) are subject to the cancellation charges set forth in the Quote issued by Company setting forth the OEM's cancellation charges.

(b) Services

The amount due for the Services completed by Company through the date of termination, plus fifteen percent (15%) of the Purchase Order line-item amount of the Services cancelled.

Any Purchase Order or part thereof that is revised by Customer after the acceptance of the applicable Purchase Order for other than an unremedied default of Company will be subject to Company's right to re-quote both price and lead time for any request by Customer to revise an order. If it is determined by Company that a revision will result in an additional revision charge, Company will calculate such charges for each individual unit and/or service ordered that Customer revises, and each individual unit and/or service may have revised completion dates.

6. TITLE, RISK OF LOSS , DELIVERY AND STORAGE. All domestic and international deliveries shall be Ex Works ("EXW") (Incoterms 2020) Company's location or such other facility designated by Company in the applicable Purchase Order ("**Delivery Point**"). Such other facility may be designated as a domestic port for international delivery. The Party responsible for international delivery shall comply with all applicable laws including those relating to the import, export, packaging, and labeling of the Equipment, and shall indemnify and defend the other Party for any breaches of such applicable laws. Customer shall be responsible for arranging further transportation of the Equipment from the Delivery Point. Risk of loss to all Equipment furnished by Company shall pass directly to Customer at the Delivery Point, subject to the provisions of this section regarding storage and Section 7 for Rental Equipment. If Customer fails to accept delivery of any of the Equipment on the date fixed pursuant to the Purchase Order or Company's notice that the Equipment has been made available at the Delivery Point, Company, at its option, may store the Equipment on Company's premises or at a third-party storage location until Customer picks them up. If Company stores the Equipment on its premises, risk of loss shall revert to Company during such period of storage, and Customer shall pay Company a storage fee of one point five percent (1.5%) of the price of the Equipment for each full month of fraction thereof, capped at $1,000.00 a day.. If Company stores the Equipment at a third-party storage location, Customer shall pay Company any transportation and rigging costs to and from storage, the third-party storage costs, plus ten percent (10%) of the storage costs for Company's overhead in administering the offsite storage. Invoices for storage shall be on a monthly basis starting the beginning at the end of the first month of storage until the shipment of the Equipment to the Delivery Point is made. All Delivery dates are estimates and under no circumstances does Company guarantee date of delivery. Company shall not be responsible or liable for any damage or loss which occurs during transportation and/or shipment of the Equipment. Company is not liable or responsible for any costs of Customer caused by any delays in transportation or delivery. Company reserves the right to manufacture and ship any items in advance of the acknowledged shipping schedule, unless expressly forbidden by the Customer at the time of the order entry. Title to the Sale Equipment shall pass to Customer upon Customer's payment to Company for the Equipment; Contactor shall retain title in all Rental Equipment at all times.

7. RENTAL EQUIPMENT. The minimum charge for any individual unit which is rented ("**Rental**") is two (2) weeks. Thereafter, monthly Rentals are billed on a month-to-month basis at the beginning of the Rental period. The Rental fee will begin upon shipment of Rental unit(s) and will terminate upon return receipt of Rental Equipment at one of Company's locations. Customer is responsible for freight charges both to and from Customer's Site. Rental charged is NOT applicable to the purchase price of the Rental Equipment nor are any Rentals prorated. Individual terms of Rental and Rental charges are discrete to each Rental as agreed between Company and Customer. Customer shall be liable for the return of the Rental Equipment to Company's warehouse in the same condition the Rental Equipment was in at the time the Rental Equipment was received by Customer, ordinary wear excepted. As specified by Company, certain Rental Equipment shall be tarped when hauled to Customer's location and when returned to Company. If Customer fails to comply with this tarping requirement, Company reserves the right to charge Customer for any resulting damage. Should Customer rent Rental Equipment from Company, the following provisions apply: (a) in the event that any of Company's Rental Equipment is lost or damaged, Customer shall continue to pay rent on the Rental Equipment until (i) the Rental Equipment is returned, and Customer pays Company the full cost to repair the Rental Equipment or (ii) Customer pays Company the full replacement cost (i.e. the retail cost) of the Rental Equipment; and (b) Customer shall be responsible for any loss or damage to Company's Rental Equipment either transported by Customer or by conveyance arranged for by Customer. Should Customer purchase the Rental Equipment, the Rental Equipment shall be sold "as is" with no warranties whatsoever if Customer has been renting the Rental Equipment for over three (3) months.

8. EVALUATION OF CUSTOMER-OWNED EQUIPMENT.

If the Quotation is for Company to perform evaluation services on Customer-owned equipment (e.g. for Company to determine how/if the piece of equipment failed and/or whether it can be repaired), then these Terms shall apply, except that: (a) Customer shall be responsible for the transportation of the Customer-owned equipment to and from Company; (b) the risk of loss and title shall remain with Customer; (c) no warranty of Service shall apply; and (d) Company shall only be liable for further damage to the Customer-owned equipment to the extent of its gross negligence or willful misconduct.

9. WARRANTIES.

(a) Warranty Periods. "**Equipment Warranty Period**" means (unless otherwise specifically stated in the applicable Quotation or Purchase Order issued by Company): (i) for new Equipment, eighteen (18) months from the date of shipment of the Equipment to Customer or twelve (12) months from the date of energization of the Equipment, whichever occurs first; and (ii) for reconditioned Equipment, thirty-six (36) months from the date of shipment of the Equipment to Customer. If Customer is purchasing the Equipment to rent to or sell to its customers or to third parties other than Customer, the warranty period shall be for twelve (12) months from the date of shipment of the Equipment by Company. "**Services Warranty Period**" means the period commencing the date Company completes such Services and ending twelve (12) months thereafter, whether or not such Services are performed by Company on Customer's premises or Company's premises. If the purpose of the Purchase Order is for Company to repair goods that are owned by Customer in Company's shop (and is not warranty repair work), such Services will be guaranteed for a period of thirty-six (36) months from the date of the completion of such Services.

(b) Services Warranty. Company warrants for the Services Warranty Period that: (i) Company will perform all Services in a good, safe and workmanlike manner in accordance with generally accepted industry practices applicable to the Services being performed, (ii) the Services are in accordance with the specifications set forth in the applicable Purchase Order, and (iii) the Services will be free from defects in materials and workmanship.

(c) Equipment Warranty. For the Equipment Warranty Period, Company warrants the following regarding Sale Equipment manufactured by Company and Rental Equipment: (i) merchantable title to such Equipment; (ii) that they substantially comply with Customer's specifications as set forth in the applicable Purchase Order; (iii) that they are guaranteed to operate in accordance with its nameplate when

operated under normal load, usage, conditions and with proper care, installation and supervision; and (iv) that they will be free from defects in material and workmanship.

(d) Exclusions from Warranties. Company does not warrant: (i) any Equipment, not manufactured by Company; (ii) that the specifications provided by the Customer are accurate, or fit for a particular use; (iii) damage caused by improper installation of the Equipment (unless performed by Company); (iv) damage caused by improper operations of the Equipment, voltage surges, negligence of others, accidents, natural forces (including fire, flood, wind and lightning), and operations beyond rated capacities, or misuse; (v) damage caused by use for purposes other than those for which it was designed; (vi) damage caused by unauthorized attachments or modification; (vii) damage caused by vandalism; or (viii) that the Equipment will meet or comply with the requirements of any safety code or regulation of any state, municipality, or other jurisdiction. If a warranty claim is made by Customer for a defect that occurs or manifests prior to the energization of the Equipment (unless Company performs the installation), Customer shall have the burden of proof that it is a legitimate warranty claim and that the Equipment was not damaged after delivery during the storing, moving or installation of such Equipment.

(e) Notice of Warranty Breach. Customer shall provide timely, written notice to Company of warranty defects.

(f) Remedies. Company shall promptly cure all valid Service Warranty defects described in such notices by reperforming the Services at Company's cost. Any Sale Equipment or Rental Equipment provided by Company which breaches this warranty shall promptly and at Company's sole option, be repaired or replaced by Company at Company's cost, except as otherwise provided in this Section 9. Company shall repair at the Customer's site all Equipment for which field repair is feasible. Should the Equipment require repair at Company's plant, Company shall arrange and pay freight to and from Customer's site anywhere in the continental U.S. Under no circumstances is Company responsible for any in/out charges associated with the connection reconnection, disassembly or rigging of the Equipment being serviced under this warranty. Company shall not be responsible for repairs or replacement made by third parties without the Company's written consent. If Company fails to cure a defect within ten (10) days after receiving written notice of such defect, Customer may cure such defect directly or through a third party. In such case, Company shall reimburse Customer for the reasonable and documented costs incurred by Customer for curing the defect within thirty (30) days after receipt of a written invoice from Customer. Any Services or Equipment cured shall have a Service Warranty Period or Equipment Warranty Period for the longer of the remainder of the original warranty period or six (6) months from the completion of the warranty cure.

(g) Warranty Limitation. Company's obligation under these warranties shall not, in any event, exceed the line-item amount paid under the applicable Purchase Order for the defective Equipment or Services. If the costs of the reperformance, repair or replacement would exceed the original Purchase Order price for such item, Company's obligations under this warranty shall be satisfied by a return of the Purchase Order price for such item.

(h) Third-Party Warranties. In the event that all or a portion of the Sale Equipment purchased are manufactured by others, the Customer's warranty is with the original manufacturer of those Equipment and subject to the warranty terms and conditions of that manufacturer. Company, as a seller of Equipment manufactured by others, will assist Customer in remediation of warranty claims, but in no circumstance is liable to fulfill the warranty obligation of those manufacturers or to cover expenses that are not covered by original manufacturers' warranty.

(i) Entire Warranties. The foregoing provisions of this Section 9 are expressly in lieu of all other warranties whatsoever, express, implied and statutory. **EXCEPT AS SET FORTH ABOVE, ALL WORK IS PROVIDED AS IS AND WITH ALL FAULTS. THE WARRANTIES MADE HEREIN SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SUCH IMPLIED WARRANTIES OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. FURTHER, THE WARRANTY REMEDIES SET FORTH HEREIN ARE THE SOLE WARRANTY REMEDIES AVAILABLE TO CUSTOMER FOR A BREACH OF WARRANTY CLAIM.**

10. INDEMNITY. Each Party shall be liable for and shall fully indemnify the other Party for any injury or death to any person or any damage to or loss of any property to the extent of the indemnifying Party's negligence or willful misconduct.

11. LIMITATION OF LIABILITY. Company's maximum liability to Customer for any breach of these Terms or any claim related to the Equipment or Services shall be the applicable Purchase Order price. **EXCEPT FOR THE DUTIES TO INDEMNIFY SET FORTH HEREIN, IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER FOR ANY EXEMPLARY, PUNITIVE, INDIRECT, INCIDENTAL, SPECIAL, LIQUIDATED, RELIANCE, ECONOMIC, CONSEQUENTIAL, CONTINGENT, CIRCUMSTANTIAL OR ENHANCED DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGE FOR DELAY, LOSS OF PRODUCT, LOSS OF USE, LOSS OF REVENUE, LOSS OF PROFITS, BUSINESS INTERRUPTION, LOSS OF OTHER PROPERTY OR EQUIPMENT, LOSS OF USE OF EQUIPMENT OR POWER SYSTEMS, COST OF PURCHASED OR REPLACEMENT POWER OR TEMPORARY EQUIPMENT (INCLUDING ADDITIONAL EXPENSES INCURRED IN USING EXISTING FACILITIES), CLAIMS OF CUSTOMERS OF THE CUSTOMER, AND LOSS OF GOOD WILL REGARDLESS OF (a) WHETHER SUCH DAMAGES WERE FORESEEABLE, (b) WHETHER OR NOT A PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, (c) THE LEGAL OR EQUITABLE THEORY (CONTRACT, TORT OR OTHERWISE) UPON WHICH THE CLAIM IS BASED, AND (d) THE FAILURE OF ANY AGREED OR OTHER REMEDY OF ITS ESSENTIAL PURPOSE.**

12. INTELLECTUAL PROPERTY. Customer acknowledges and agrees that Company's Equipment is protected by copyright, trademark, patent, or other proprietary rights of Company, its parent companies, subsidiaries, and affiliates. Unless the Equipment is *work for hire*, Customer gets no intellectual property rights in such Equipment (other than a license to use such Equipment) and agrees not to modify or alter any of the intellectual property made available by Company in connection with the Equipment. Customer further agrees not to adapt, translate, modify, decompile, disassemble, or reverse engineer the Equipment or any software used in connection therewith. No Equipment shall be considered *work for hire* unless a Purchase Order specifically orders or commissions Company to fabricate or manufacture the Equipment in a new or unique manner to Customer's specifications, and not in the manner typically fabricated or manufactured by Company.

13. CONFIDENTIALITY. "**Confidential Information**" means all non-public, confidential, trade secret and/or proprietary information disclosed, orally or in writing, or made available by one Party (the "Disclosing Party") to the other Party (the "Receiving Party"), including but not limited to, business information; technical information, including materials, drawings, designs, specifications, techniques, manuals, photographs, processes and other intellectual property and know-how; the terms of this Quotation including pricing; and any other information that a reasonable person would consider to be confidential. Receiving Party: (a) may only disclose the Confidential Information to any of its representatives who need to know of the existence of the Confidential Information for the purpose of this Quotation; and (b) will use the same degree of care to protect the Confidential Information from unauthorized use or disclosure as it would use to protect its own

confidential information, but in no event will use less than reasonable care. Receiving Party acknowledges that Disclosing Party would suffer serious and irreparable damage and would not have an adequate remedy at law if Receiving Party or any of its representatives breaches any of its obligations under this provision. Accordingly, Disclosing Party will be entitled to any injunction, specific performance or other remedy in law or equity in respect of any breach or threatened breach of this confidentiality provision.

14. NO ASSIGNMENT. Customer agrees not to assign or otherwise transfer its rights or obligations under these Terms without prior express written consent of Company. These Terms shall be binding on and inure to the benefit of the Parties to these Terms and their respective successors and permitted assigns.

15. FORCE MAJEURE. Company shall not be liable for any delay in providing the Equipment or Services, or any other failures in performance due to acts beyond its control. Such acts shall include, but are not limited to, acts of God, embargo, stoppage of labor, failure to secure materials or labor from usual sources of supply, riots, acts of war, fire, and acts of governmental or military authorities.

16. GOVERNING LAW, JURISDICTION AND VENUE. These Terms shall be governed and construed in accordance with the laws of the State of Texas, and any and all disputes hereunder shall be resolved in accordance with the laws of the State of Texas, except for any such law that would direct the application of the law of a different jurisdiction. The Parties consent to personal jurisdiction in any action brought in any court, federal or state, within Harris County, Texas, having personal and subject matter jurisdiction arising under these Terms and with respect to any such claim the Parties irrevocably waive, to the fullest extent permitted by law, any claim, or any objection they may now or hereafter have, that venue is not proper with respect to any such suit, action, or proceeding brought in such a court in Harris County, Texas, including any claim that such suit, action, or proceeding brought in such court has been brought in an inconvenient forum and any claim that a Party is not subject to personal jurisdiction or service of process in such Harris County forum.

17. SEVERABILITY. Every provision of these Terms is intended to be severable. If any term or provision is illegal, invalid, or unenforceable, for any reason whatsoever, such illegality, invalidity, or unenforceability shall not affect the validity of the remainder. In lieu of such illegal, invalid, or unenforceable provision, there shall be added automatically as part of these Terms provisions similar in terms as necessary to render such provision legal, valid, and enforceable.

18. NON-WAIVER. A Party's failure to enforce any or all of these Terms shall not constitute a waiver of its rights with respect to the same or any subsequent breach.

19. RELATIONSHIP OF PARTIES. Nothing herein shall be construed to create a partnership, joint venture, agency, fiduciary or employment relationship between the Parties.

20. ATTORNEY'S FEES. If any action or proceeding shall be commenced to enforce these Terms, or any right arising in connection with these Terms, the prevailing Party in such action or proceeding shall be entitled to recover from the other Party, reasonable attorneys' fees, costs, and expenses incurred by such prevailing Party in connection with such action or proceeding.

21. ENTIRE AGREEMENT. These Terms constitutes the entire understanding among the Parties with respect to the subject matter hereof, superseding all negotiations, prior discussions and prior agreements and understandings relating to such subject matter. Further, no oral statements about the Equipment or Services not in writing in these Terms shall be binding on a Party.

By execution of these Terms in the space provided below, Customer acknowledges and agrees with the foregoing terms and conditions as of the date of Customer's signature.

CUSTOMER:

Customer Name: _____

Signature: _____

Name: _____

Title: _____

Date: _____

TOWN OF LANDIS
North Carolina

REQUEST FOR PROPOSALS (RFP)
Transformers

Town of Landis, North Carolina

Issued: March 13, 2025

Response Due: March 25, 2025

TEMA
Tarheel Electric Membership Association, Inc.

Bo Lewis
Director, Marketing & Technical Services

8730 Wadford Drive
Raleigh, NC 27616

Cell: 919-576-6310
bo.lewis@ncemcs.com

PROPOSAL ATTACHMENTS

1-Transformers

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name The Tarheel Electric Membership Association Inc. (TEMA)

Representative Name/Title Jason L Caudle / SVP COO
Address 8730 Wadford Drive
Office Phone _____ Cell Phone 919-602-8582
Website Email jason.caudle@ncemcs.com

Material Costs	Labor Costs	Other / Note
50KVA Pads 2 @ $	3955 Each	Total: $7910.00
25KVA Pads 2@ $30	48 Each	Total: $6096.00
50 KVA Poles 10 @	3565 Each	Total: $35650.00
25 KVA Poles 10 @	2218.00 Each	Total: $22180.00

Total Cost $71,836.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature Jason L Caudle Date 3.21.25

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name_____

Address_____

Contact Name_____ Phone_____

Business Relationship _____

Business Name_____

Address_____

Contact Name_____ Phone_____

Business Relationship _____

Business Name_____

Address_____

Contact Name_____ Phone_____

Business Relationship _____

Proposal Company Narrative

Company Name The Tarheel Electric Membership Association Inc.

Number of Employees 20 Years of Operation 50

Current Clients Public Power Electric Providers in NC and VA

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

Supplier of all Transmission, Substation and Distribution Electric Utiltiy Material

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name_____

Agent's Name, Address, Telephone_____

_____

Policy Number _____Effective Date_____

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name_____

Official Address_____

Signature & Title_____

Date_____

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official Jason L Caudle

Name and Title of Firm's Authorized Official Jason L Caudle SVP,COO

Date 3.21.25

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: Prime firm Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes No

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes No

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?
Yes N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: Jason L Caudle 8730 Wadford Drive Raleigh NC 27616

As a duly authorized representative, I certify the above information is accurate.

Jason L Caudle
Signature of Firm's Authorized Official

Jason L Caudle SVP,COO
Printed Name and Title of Firm's Authorized Official

3.21.25
Date

QUOTE #
CUSTOMER COPY QUOTED DATE 3/18/25

OH

BILL TO:
Town of Landis

SHIP TO:
TOWN OF LANDIS
704 WEST BLUME ST.

LANDIS NC28088

DESCRIPTION	PRODUCT NUMBER	QTY	UNIT PRICE	EXT PRICE

TRANSFORMER LOSS DATA IS BASED ON ANSI C57.12.00:
LOSS GRT: AVE VOLT% : 100
NL TEMP BASIS: 85 LL TEMP BASIS: 85
QUOTED PER TOWN OF LANDIS POLE SPECIFICATION AND
PER THE DESCRIPTION PROVIDED WITH THE RFQ

EXCEPTION TO THE CONSTRUCTION SECTION: ALL UNITS
WILL RECEIVE A PRESSURE RELIEF VALVE IN LIEU OF
A SELF-VENTING COVER.

EXCEPTION TO THE CONSTRUCTION SECTION: THE COVERS
WILL BE SLOPED 5 DEGREES.

EXCEPTION TO THE CONSTRUCTION SECTION: THE CORES
WILL BE SHELL TYPE IN LIEU OF CORE TYPE.

EVALUATED TO MEET DOE 2016 REQUIREMENTS

ITEM 1				
OVERHEAD DIST. TRANSFORMER	OVERHEAD	1	3565.00	3565.00
ITEM# : 1.00				

INTERLACED Y TANK DIAM 18.8 NON-MAG N STEEL TYP SI
NL= 89 LL= 562 IZ=2.200 TL= 651
OPTIONS BEGIN.....

050	50 KVA
001G	12470GRDY/7200 95BIL 1BU
001	7200
G	Grounded Wye System
001	NO TAPS
601	120/240 3 OR 4 LVBU (INTERLACED)
2	2 SETS OF HANGER BRACKETS
000	CONVENTIONAL
A04	NORMAL DUTY MOV (18"WIRE)
015	15KV MILD STEEL COVER
015	15KV GALV MILD STL CVR BAND
300	GenThermoSet/ThermoPlast w/EyeBolt
S	(1) STAINLESS NAMEPLATE
0	STENCIL kVA
ARRESTER KV PRI	0000000010.00000
0	STD TX MINERAL OIL

OPTIONS END.....

CUSTOMER COPY

QUOTE #

QUOTED DATE

BILL TO:
Town of Landis

SHIP TO:
TOWN OF LANDIS
704 WEST BLUME ST.

LANDIS NC28088

DESCRIPTION	PRODUCT NUMBER	QTY	UNIT PRICE	EXT PRICE
ITEM 2				
OVERHEAD DIST. TRANSFORMER	OVERHEAD	1	2218.00	2218.00

ITEM# : 2.00
INTERLACED Y TANK DIAM 15.0 NON-MAG N STEEL TYP SI
NL= 55 LL= 334 IZ=2.300 TL= 389
OPTIONS BEGIN.....
025 25 KVA
001G 12470GRDY/7200 95BIL 1BU
001 7200
G Grounded Wye System
001 NO TAPS
601 120/240 3 OR 4 LVBU (INTERLACED)
2 2 SETS OF HANGER BRACKETS
000 CONVENTIONAL
A04 NORMAL DUTY MOV (18"WIRE)
015 15KV MILD STEEL COVER
015 15KV GALV MILD STL CVR BAND
300 GenThermoSet/ThermoPlast w/EyeBolt
1 RECEIVES STD LENGTH LV GRD STRAP
S (1) STAINLESS NAMEPLATE
0 STENCIL kVA
ARRESTER KV PRI 0000000010.00000
0 STD TX MINERAL OIL
OPTIONS END.....

48 HOUR NOTICE

CUSTOMER COPY QUOTE # QUOTED DATE 3/18/25

PAD

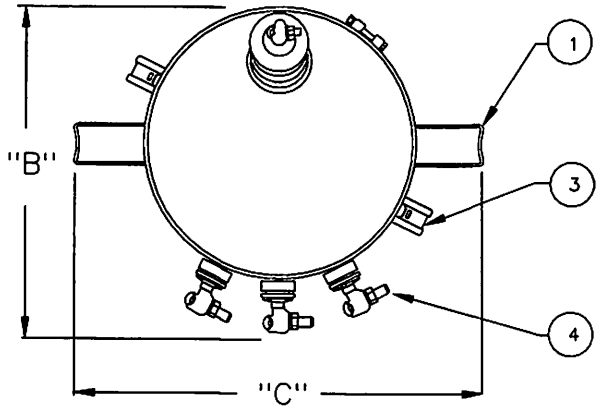
BILL TO:
Town of Landis (PAD)

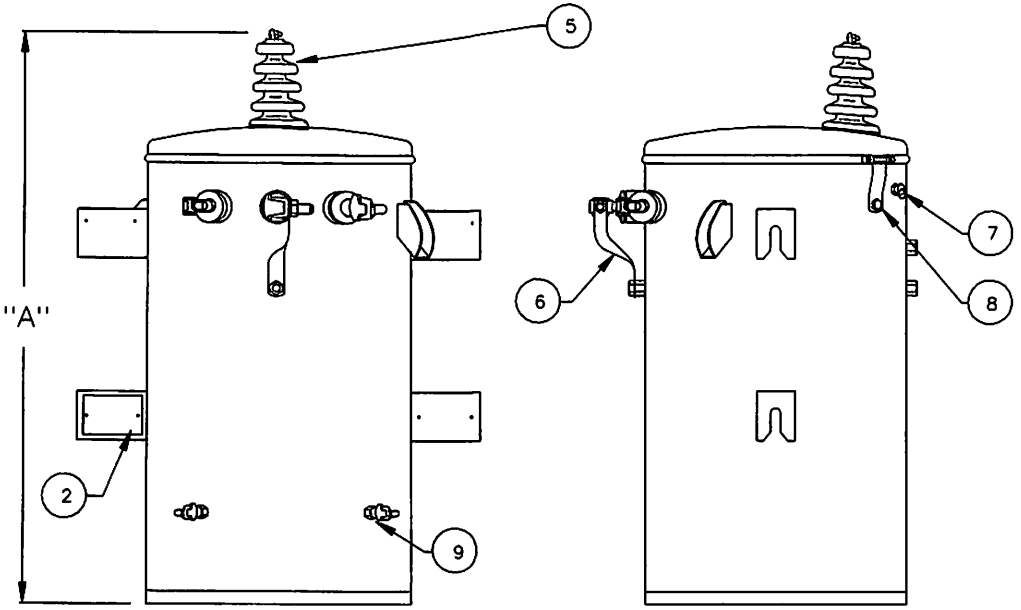
SHIP TO:
TOWN OF LANDIS
704 WEST BLUME ST.

LANDIS NC28088

DESCRIPTION	PRODUCT NUMBER	QTY	UNIT PRICE	EXT PRICE
TRANSFORMER LOSS DATA IS BASED ON ANSI C57.12.00: LOSS GRT: AVE VOLT% : 100 NL TEMP BASIS: 85 LL TEMP BASIS: 85 QUOTED 50 & 25KVA PAD MOUNT PER SPEC. PROVIDED WITH RFQ ONLY,12470GRDY/7200 95KV BIL ONE BUSHING, LOOP FEED,TAPS AS 4 @ 2.5% BELOW NOMINAL,240/120 SECONDARY VOLTAGE,MINERAL OIL FILLED,MILD STEEL CONSTRUCTION,HIGH VOLTAGE BUSHING WELLS ONLY,5/8" STUD SECONDARY BUSHINGS ONLY,FAULT SENSING BAYONET FUSING WITH ISOLATION LINK,EXTRA HIGH VOLTAGE GROUND PAD,2 NAMEPLATES,ANCHOR CLEATS,SECONDARY BREAKER, FORMULA OF NL=3.33 LL=.85 & TO MEET DOE 2016 ERMCO TEST PER IEEE/ANSI STANDARDS. EXCEPTION TO 1. CONNECTION TEST,2. DEMAGNETIZATION ,3. HIGH TO LOW IRON CONTINUITY,4.LOW TO HIGH IRON CONTINUITY, 5. 400 HERTZ OVER POTENTIAL.				
ITEM 1				
PADMOUNT DIST. TRANSFORMER ITEM# : 1.00	PADMOUNT	1	3955.00	3955.00
INTERLACED N TANK DIAM .0 NON-MAG N STEEL TYP AM NL= 29 LL= 702 IZ=2.400 TL= 731				
OPTIONS BEGIN.....				
TYP2A	LOW PROFILE, ANSI STD. TYPE II			
L	LOOP FEED WITH 200 AMP STRAP			
050	50 KVA			
001	12470GRDY/7200 95BIL 1BU			
001G	12470GRDY/7200			
002	4 AT 2.5% B.N.			
441	240/120 (3 LVBU ONLY) LHL			
M10	ECI E9F54MFC100 CURR.SENSING 25AMP			
E14	ECI#499 ISOLINK 3-15-14(A03 EQUAL)			
STD	STANDARD BREAKER			
003	GENERIC HV BUSH WELL 3-98 OR 3-135			
000	COPPER STUD SECONDARY BUSHINGS.			
000	NO CONNECTORS REQUIRED			
000	12GA MILD STEEL DOOR			
H	EXTRA HV GROUND BOSS ONLY ON F.P.			
X	(2) ALUMINUM NAMEPLATES			
0	STD TX MINERAL OIL			
OPTIONS END.....				

"B" & "C" Dimensions include Arresters & Radiators, if applicable.





H.V. : 12470GRDY/7200 95BIL 1BU CSP CONV

L.V. : 120/240 3 OR 4 LVBU (INTERLACED) 30 BIL

TAPS: NO TAPS

PART	DESCRIPTION	QUANTITY
1	HANGER BRACKET TYPE: A	2 SETS
2	NAMEPLATE (ON LOWER BRACKET) TYPE: (1) STAINLESS NAMEPLATE	1
3	LIFTING LUGS	2
4	LOW VOLTAGE BUSHINGS TYPE: GenThermoSet/ThermoPlast w/EyeBolt	3
5	HIGH VOLTAGE BUSHINGS TYPE: STANDARD HV BUSHING	1
6	GROUNDING PROVISION: W/ GROUND STRAP (S)	1
7	P.R.V.: GENERIC.25 10PSI35SCFM (-01 OR -30)	1
8	COVER GROUND STRAP	1
9	TANK GROUNDING PROVISIONS: W/ (2)GROUND LUGS	2

ADDITIONAL FEATURES

TAP or DUAL VOLTAGE SWITCH: NOT REQUIRED
EXTERNAL ARR. : HV: 10 KV NORMAL DUTY MOV (18"WIRE)
STENCIL KVA
Oil TYPE: STD TX MINERAL OIL
TK | CVR: MS | 15kV MS
CVR BAND: 15kV MS

ITEM AND/OR STOCK #	KVA	DIMENSIONS IN INCHES A	B	C	APPROX. GAL. OIL	APPROX. WEIGHT LBS.
1	50	40.9	31.3	27.1	27	612
2	25	30.9	27.5	23.3	9	323

ERMCO

CUSTOMER: TOWN OF LANDIS
RFQ/SPEC #:

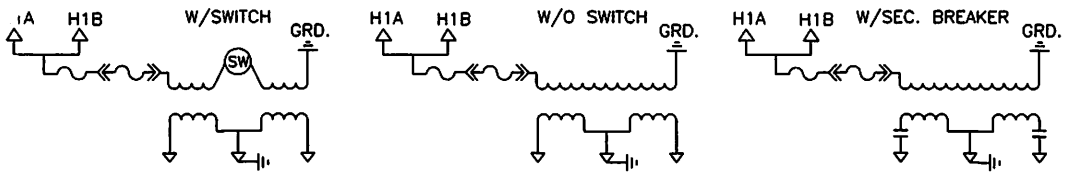
SCALE:	DATE:	BY:	QUOTE NUMBER:
NTS	03/18/25	EAR	756066

** UNCONTROLLED **

H. V.: 12470GRDY/7200 95BIL 1BU

240/120 (3 LVBU ONLY) LHL 30 BIL

4 AT 2.5% B.N.



ITEM AND/OR STOCK #	KVA	DIMENSIONS IN INCHES A WIDTH	B HEIGHT	C TANK DEPTH	D DOOR DEPTH	E CABLE OPENING		
1	50	36	24	20.2	16	12.375	41	892
2	25	34	24	14	16	12.375	26	632

"E" = "D" − 3.625"

DIM "F" IS :	IF DIM "A" IS
10"	32"
12"	34" & >

PART	DESCRIPTION	QUANTITY
1	CONDUIT ENTRANCE AREA	1
2	FUSING : BAYONET FUSE: CURRENT SENSE ISO LINK	
3	PARKING STAND	1
4	GENERIC HV BUSH WELL 3-98 OR 3-135 NO LBRK SWITCH	2
5	(2) ALUMINUM NAMEPLATES	2
6	P.R.V.: GENERIC.25 10PSI35SCFM (-01 OR -30)	1
7	.50 IN. OIL LEVEL PLUG	1
8	LVBU: COPPER STUD SECONDARY BUSHINGS. .625 IN. - 11 STUD SPADES: NOT REQUIRED	3
9	COMPARTMENT COVER	1
10	LIFTING BOSS (.625"-11 BLIND TAPPED)	4
11	DETACHABLE GROUND STRAP	1
12	0.500 NPT DRAIN PLUG (STANDARD)	1
13	.500"-13 SILICON BRONZE PENTABOLT (STANDARD)	1
14	PADLOCK HASP	1
15	GROUND NUT	4
	W/ GROUND LUGS #10-1 TINNED LUG (DEFLT.STD)	2
16	REMOVABLE SILL	1
17	DOOR RETAINER	1
18	TAP SW: STANDARD DV &/OR TC, CAP WRENCH	1
19	SECONDARY BREAKER HANDLE	1
20	NO CONDUIT ENTRANCE HOLE REQUIRED	

ADDITIONAL FEATURES

KVA DECAL: ERMCO STD KVA 2.5 YLW/CLR ON DOOR

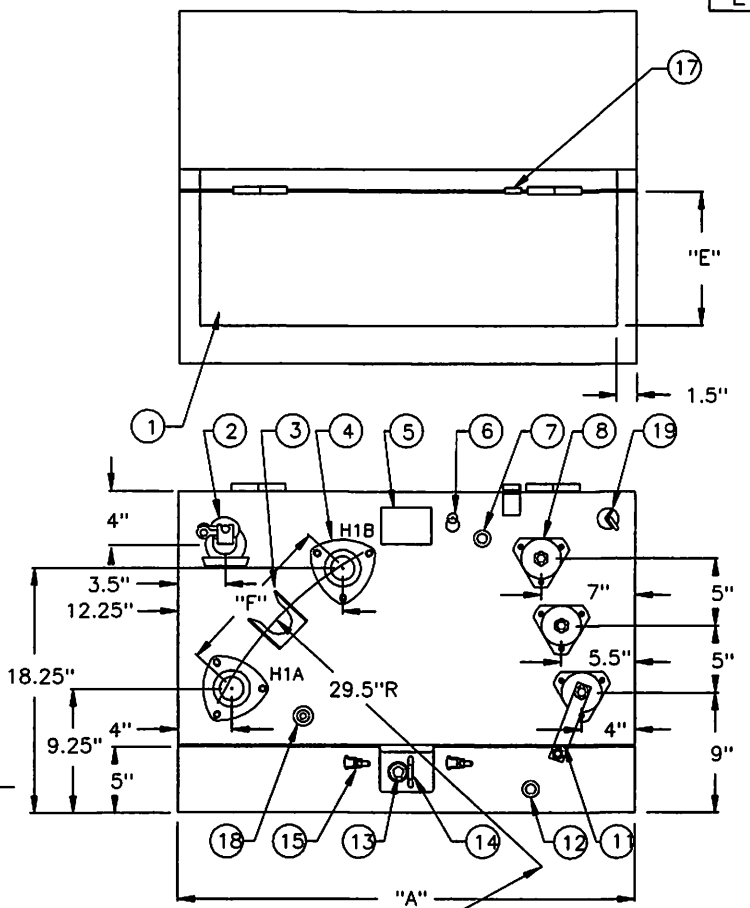
ANCHOR CLEATS 2

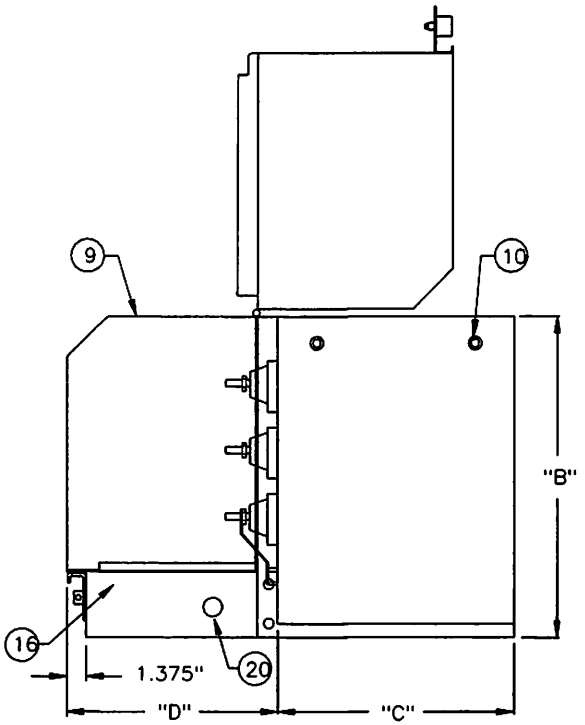
FILL PORT: FILL PLUG

EXTRA GRD: EXTRA HV GROUND BOSS ONLY ON F.P.

OIl TYPE: STD TX MINERAL OIL

TK|DR|SL: MS





POINT 4" BELOW PAD SURFACE
10" RIGHT OF TRANS. CENTERLINE AND
12" IN FRONT OF TRANS. FRONT PANEL

** UNCONTROLLED **

ERMCO

CUSTOMER: TOWN OF LANDIS

RFQ/SPEC #:

749

SCALE:	DATE:	BY:	QUOTE NUMBER:
NTS	03/18/25	JCC	756071

TOWN OF LANDIS North Carolina

REQUEST FOR PROPOSALS (RFP)
Transformers

Town of Landis, North Carolina

Issued: April 03, 2025

Response Due: April 17, 2025

PROPOSAL ATTACHMENTS

1-Transformers

It is the intent of the Town to accept the lowest responsible/responsive proposal. The selected proposal will be the most advantageous regarding price, quality of service, vendor qualifications and capabilities to provide the specified service, and other factors which the Town may consider. The Town reserves the right to accept or reject any or all proposals and to waive irregularities therein.

The undersigned hereby submits the following proposal for the cost of materials and services as described within this Request for Proposal document:

Business Name Technology International, Inc.

Representative Name/Title RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE

Address 1331 South International Pkwy, Suite 2251, Lake Mary, FL 32746 USA

Office Phone (407) 359-2373 Cell Phone ————

Website Email tii@tii-usa.com

Material Costs	Labor Costs	Other / Note

Total Cost 73,200.00

Payment will be made to the contractor within 30 days upon receiving materials and the monthly invoice. The invoice shall include date(s) of service and the amount for each date. Special services provided will be billed via a separate invoice and described by the service provided and the date it was provided.

Authorized Signature Date 04/16/2025

Proposal References

Please list three (3) client references. The Town reserves the right to contact references other than, and/or in addition to, those being furnished below.

Business Name Horry County Schools, SC

Address 335 Four Mile Rd. Conway, SC 29526

Contact Name Vicki Williams Phone 843/488-6938

Business Relationship _____

Business Name U.S. Navy

Address China Lake, CA 93555

Contact Name Terryl Mitchell Phone 760-939-1998

Business Relationship _____

Business Name Massachussets Water Resource Authority (MWRA)

Address Boston, MA 02129

Contact Name Allan Cassasa Phone _____

Business Relationship _____

Proposal Company Narrative

Company Name Technology International, Inc.

Number of Employees 10 Years of Operation 32

Current Clients

Please include a brief narrative in the space below to include any additional information you wish to share that may assist us in choosing the best vendor for our needs.

Property/Liability and Worker's Compensation Certification

The selected vendor must provide a Certificate of Insurance including workers' compensation coverage naming the Town as additional insured with minimum insurance requirements of $1,000,000.

- I understand that, if my proposal is selected, I will be required to provide a Certificate of Insurance with a minimum coverage of $1,000,000 naming the Town of Landis as additional insured.

- I hereby certify that I have and will maintain in full force and effect a policy of Workers Compensation Insurance in compliance with the Laws of the State of North Carolina with the following insurance company:

Insurance Company Name_____

Agent's Name, Address, Telephone_____

_____

Policy Number _____Effective Date_____

Proposal Independent Contractor Statement

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto or as constituting the Contractor as the agent, representative, or employee of the Town for any purpose or in any manner whatsoever. The Contractor is to be and shall remain an independent contractor with respect to all services performed.

The Contractor represents that it has, or will secure at its own expense, all personnel required in performing services. Any and all personnel of the Contractor or other persons, while engaged in the performance of any work or services required, shall have no contractual relationship with the Town, shall not be considered employees of the Town and any and all claims that may or might arise under the Unemployment Compensation Act or the Workers' Compensation Act of the State of North Carolina on behalf of said personnel arising out of employment or alleged employment including, without limitations, claims of discrimination against the Contractor, its officers, agents, contractors or employees, shall in no way be the responsibility of the Town; and the Contractor shall defend, indemnify and hold the Town, its officers, agents and employees harmless from any and all such claims irrespective of any pertinent tribunal, agency, board, commission or court. Such personnel or other persons shall neither require nor be entitled to any compensation, rights or benefits of any kind whatsoever from the Town, including without limitation, tenure rights, medical and hospital care, sick and vacation leave, Workers Compensation, Unemployment Insurance, disability, or severance pay.

Company/Individual Name Technology International, Inc.

Official Address 1331 South International Pkwy, Suite 2251, Lake Mary, FL 32746 USA

Signature & Title _____

Date 04/16/2025

Certification Regarding Lobbying

The undersigned Firm certifies, to the best of his or her knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal Contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal Contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government-wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, et seq.)]

The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including Sub-contracts, sub-grants, and Contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(l)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure

Signature of Firm's Authorized Official

Name and Title of Firm's Authorized Official RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE

Date 04/16/2025

Note: This form may be signed electronically. All firms proposed for the contract must sign and return this form as part of the solicitation response.

Intent to Perform as a Minority Business Enterprise Firm or Sub-firm

All Minority Business Enterprises (MBE) proposed for the following solicitation must fill out this portion of the form.

Firm is proposed as: (Prime firm) Sub-firm

Is the firm a NC Department of Administration certified Historically Underutilized Business?

Yes (No)

Is the firm a NC Department of Transportation certified Disadvantaged Business Enterprise?

Yes (No)

If the answer is no to both questions above, is the firm an approved Minority Business Enterprise by the Town of Landis?

Yes NO N/A (firm is qualified under one of the two methods above)

Legal name of the firm and physical address: TECHNOLOGY INTERNATIONAL INC

1331 S INTERNATIONAL PKWY, SUITE 2251 LAKE MARY, FL 32746

As a duly authorized representative, I certify the above information is accurate.

Signature of Firm's Authorized Official

RIFAT HABIB BUSINESS DEVELOPMENT EXECUTIVE

Printed Name and Title of Firm's Authorized Official

04/16/2025

Date

Technology International, Inc.
1331 South International Parkway, Suite 2251
Lake Mary, FL 32746
Tel: (407) 359-2373
Fax: (407) 359-2372
E-mail: tii@tii-usa.com
Website: www.tii-usa.com

Equipment Proposal

Description: Transformers

Agency: Town of Landis, North Carolina

Attention: Maddalyn Shuffler

TII Ref: **TII/NC/0425/43906**

Date: 04/16/2025

In response to your quote request for Transformers, Technology International, Inc. is pleased to submit the following for consideration:

ITEM NO.	QTY	DESCRIPTION/ MODEL NO.	UNIT PRICE	EXTD. PRICE
1	02	50.0 KVA Type: Pad II Conv Primary/Secondary: 7200 (95 BIL) 240/120 (30 K NLL: 81 %IZ: 2.32 LL: 611 % EXI: .22 #HV BUSH: 2 TAPS: No Tap HV Brand: Central Moloney	$4,350.00	$8,700.00
2	02	25.0 KVA Type: Pad II Conv Primary/Secondary: 7200 (95 BIL) 240/120 (30 K NLL: 54 %IZ: 2.25 LL: 327 % EXI: .29 #HV BUSH: 2 TAPS: No Tap HV Brand: Central Moloney	$3,500.00	$7,000.00

3	10	50.0 KVA Type: Pole Conv Primary/Secondary: 7200 (95 BIL) 240/120 (30 K NLL: 78 %IZ: 2.24 LL: 626 % EXI: .21 #HV BUSH: 1 TAPS: No Tap HV Brand: Central Moloney	$3,100.00	$31,000.00
4	10	25.0 KVA Type: Pole Conv Primary/Secondary: 7200 (95 BIL) 240/120 (30 K NLL: 50 %IZ: 2.20 LL: 347 % EXI: .27 #HV BUSH: 1 TAPS: No Tap HV Brand: Central Moloney	$2,650.00	$26,500.00
Total.....$73,200.00				

Warranty: Manufacturer's Standard warranty applies.

Delivery:

- Estimated delivery is **22 Weeks** after receipt of order and approved submittal.
- *Please note, there may be unanticipated disruptions and delays in the supply chains globally, for parts, components, equipment and internal manufacturing services such as engineering, production allocation, and logistics. This may result in manufacturing & delivery delays out of our control. We will do our best to communicate all such impacts and reduce the effects of any such delays.*
- All delivery dates quoted are subject to manufacturer's confirmation at time of order.
- Submittal data will be provided for approval after receipt of order (if applicable)
- Customer to provide equipment and personnel to unload

Freight: Included to Landis, NC 28088 USA.

Quote Validity: 30 days.

Payment Terms: NET 30
Prompt Payment discount: 1/4 % 10 days

*** **Notes:**

- Quoted price is not available on a line item basis. This is an offer for a lump sum contract.

Technology International, Inc. Corporate data:
We are a small business and our Tax Payer Identification Number (TIN): 650342335. The above price quoted does not include any sales, excise or similar taxes.

We trust that this proposal will meet your requirements and we look forward to hearing from you.

If you have any questions or need more information, please contact us by phone at 407-359-2373, fax at 407-359-2372 or email us at tii@tii-usa.com

Respectfully submitted,

RIFAT HABIB

Rifat Habib
Business Development Executive
Technology International, Inc.

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Jessica St. Martin, Parks and Recreation Director

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Approval of Replacing the Belson Outdoors Waldorf Bench with the SiteScapes Westport Bench for the DC & Frances Linn Community Park**

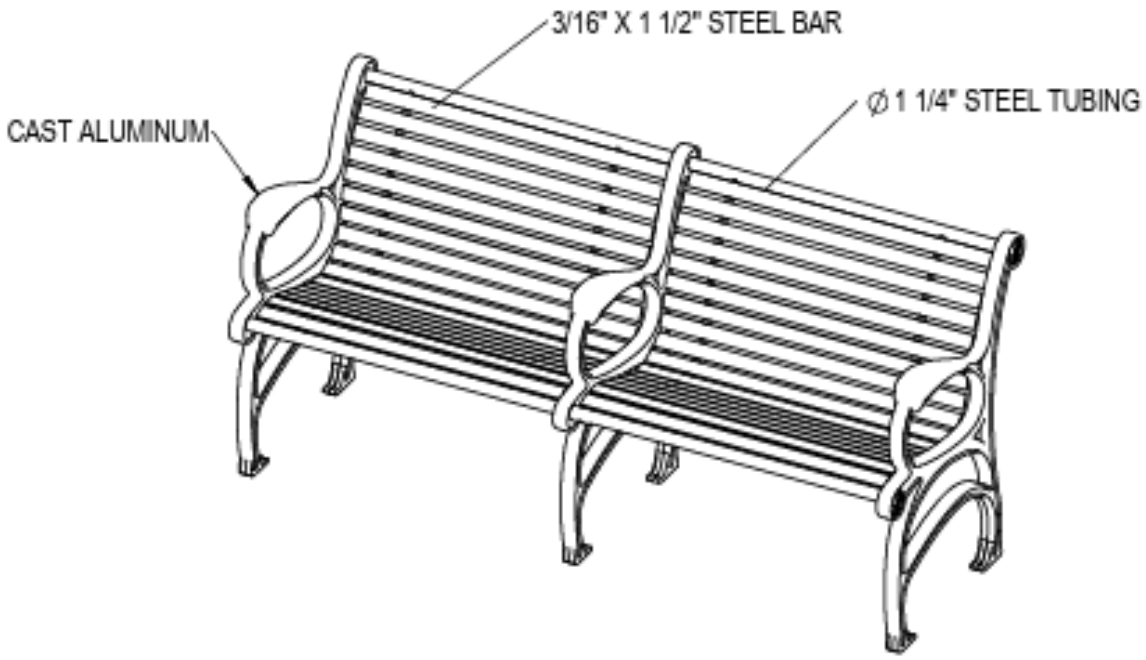
DETAILS:

Consider the approval of replacing the Waldorf Bench with the Westport Bench for the DCFL Park. The style and placement of the center arm of the Waldorf Bench causes an issue with the installation of the memorial plaques.

The Westport Bench is an identical style, from Sitescapes, that offers a different center arm piece. This arm piece is installed midway up the bench and allows space at the top for the plaques to be installed in the center of the bench.

The cost of the Westport Bench is $2,070.38 in comparison to the Waldorf Bench that was priced at $2,756.15. I make the recommendation to go with the Westport Bench in the amount of $2,070.38 per bench.

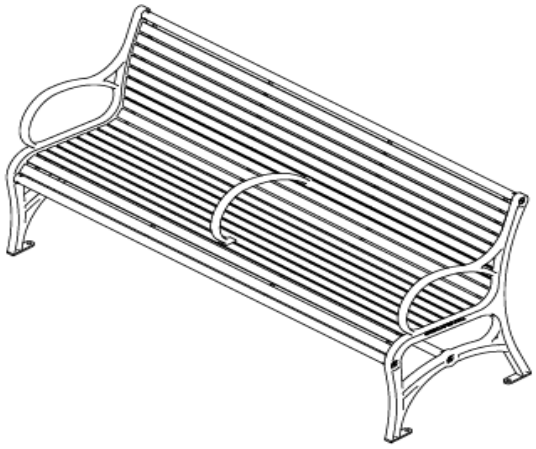
1. Currently Approved Belson Outdoors – Waldorf Bench - $2,765.15 per Bench



2. SiteScapes – Westport Bench - $2,070.38 per Bench

siteScapes	P.O. Box 22326 Lincoln, NE 68542	PF: 402/421-9464 FX: 402/421-9479	WEBSITE: www.sitescapesonline.com E-MAIL: info@sitescapesonline.com
		INCH TOLERANCES U.O.S.	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SITESCAPES, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SITESCAPES, INC. IS PROHIBITED.
TITLE *WESTPORT BACKED BENCH*	PRODUCT NO. *WP1-1011*	FRACTION--±1/16" ANG----------±1°	

*Available in powder coat and DuraCoat finishes



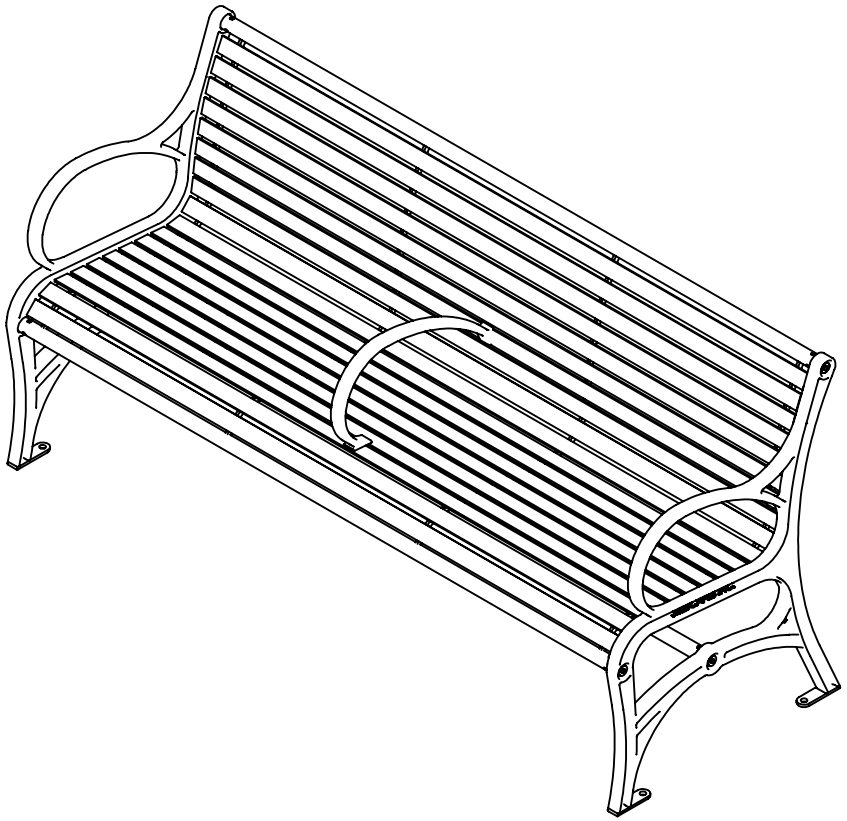
sitescapes

P.O. Box 22326
Lincoln, NE 68542

PF: 402/421-9464 | WEBSITE: www.sitescapesonline.com
FX: 402/421-9479 | E-MAIL: info@sitescapesonline.com

TITLE	PRODUCT NO.	INCH TOLERANCES U.O.S.	
WESTPORT BACKED BENCH	*WP1-1011*	FRACTION-- ±1/16" ANG---------- ±1°	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SITESCAPES, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SITESCAPES, INC. IS PROHIBITED.

*Available in powder coat and DuraCoat finishes



sitescapes
P.O. Box 22326
Lincoln, NE 68542
PF: 402/421-9464 | WEBSITE: www.sitescapesonline.com
FX: 402/421-9479 | E-MAIL: info@sitescapesonline.com

TITLE	PRODUCT NO.	INCH TOLERANCES U.O.S.
WESTPORT BACKED BENCH	*WP1-1011*	FRACTION--±1/16" ANG----------±1°

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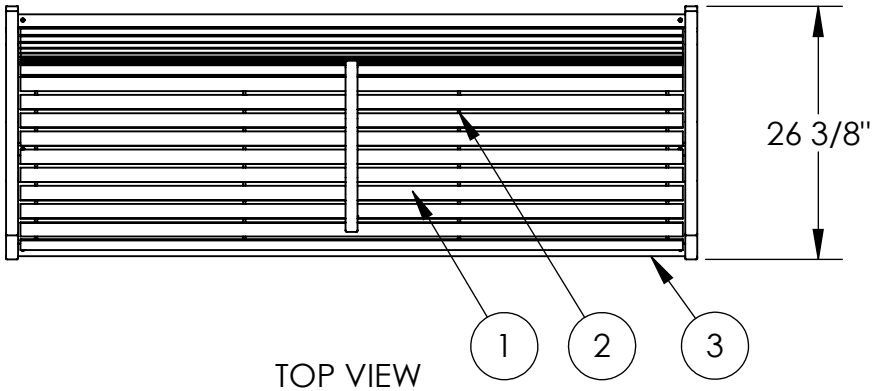
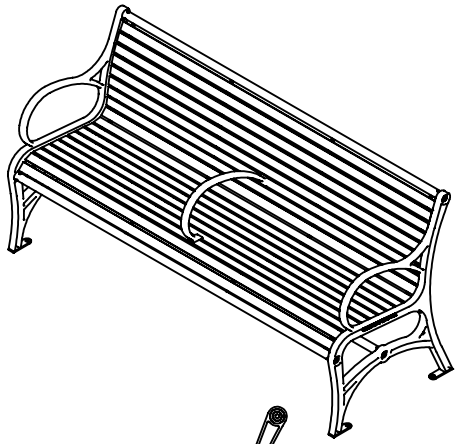
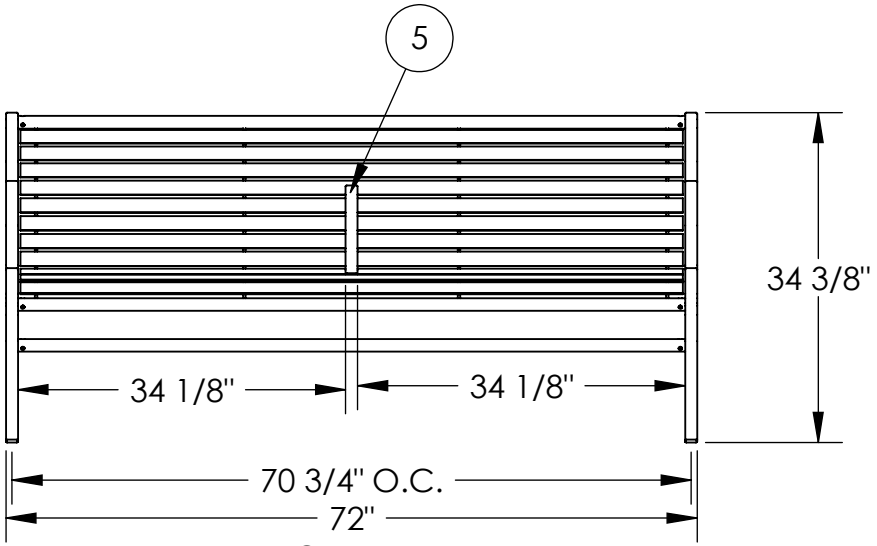
*Available in powder coat and DuraCoat finishes

Materials List
(1) Seat Straps - 1/4" x 1 1/2" Steel Flat Bar
(2) Support Straps - 1/4" Sheet Metal
(3) Support Pipes - ∅1.315" x .133" Steel Pipe
(4) End Units - 1 1/4" Cast Iron with 9/16" Mounting Holes
(5) Center Armrest - 1" Cast Iron
(6) Mounted with Four ∅1/2" x 4-5" Stainless Steel Anchor Bolts (Customer Supplied)

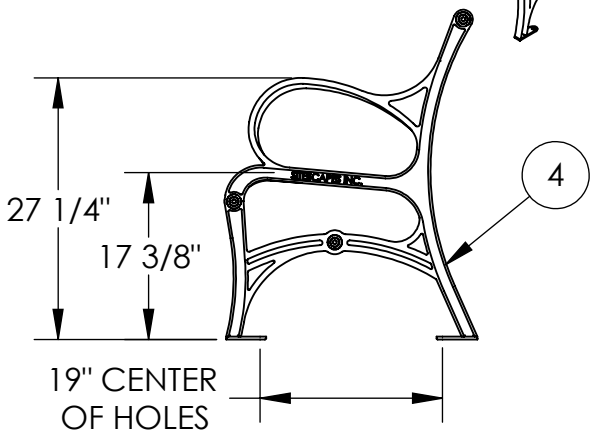


TOP VIEW





FRONT VIEW



RIGHT SIDE VIEW

SITESCAPES

2401 Production Dr.
Roca, Nebraska 68430
Tel: 888.331.9464 Fax: 402.421.9479
info@sitescapesonline.com
www.SiteScapesOnline.com

Quote

Date Issued	Quote Num
3/26/2025	**85122**

To:
Town of Landis
c/o Jessica St. Martin
Tel: 704.857.2411
Email: stmartin@townoflandisnc.gov

From:
SiteScapes, Inc.
c/o Hannah Jacobs
2401 Production Dr.
Roca, NE 68430
Tel: 888.331.9464
Fax: ..
Email: hannah@sitescapesonline.com

Project Name:
Town of Landis Community Park

Standard lead time is 45 to 60 days.	**Pricing good for thirty days.**

Comments:

product	description	price	qty	amount
WP1-1011-PF	Backed Bench, Cast Iron Ends, Six Foot Length, Horizontal Straps, Center Armrest, Powder Coat Finish, To be determined	$1,370.00	1	$1,370.00
Surcharge	Steel/Aluminum 22.71% Material Surcharge, NA	$35.38	1	$35.38
			freight to zip code 28088	$665.00
			total	$2,070.38
			less 2% prox 10	
50% deposit due at time of order.				

***Purchaser is responsible for confirming options, materials, quantities, etc., for completeness and conformity to plans and specifications

***Consignee responsible for off -loading, lift gates, pallet jacks or other services. Special services must be requested in advance and are subject to additional charges

***Refused deliveries and re-routes are subject to additional charges

* If we are not included on your Invitation to Bid list, please add us under 2870 or 129300 - Site Furnishings.

Quote #
WQ 374800

Here is the Quote as per your request. The 'Shipping' total has been applied.
To place an order, simply click 'Submit Order Confirmation' below.
Please print this page for your records.
Customer Order Confirmation is **required** to process order.

BELSON OUTDOORS
627 Amersale Drive
Naperville, IL. 60563
sales@belson.com
Toll Free: 1-800-323-5664
Phone: 1-630-897-8489
Fax: 1-630-897-0573

QUOTE #
WQ 374800
Expires 3/5/2025

Model #	Description	Lbs	Quantity	Unit Price	Unit Total
WLB-6C-HS-FS	6' Waldorf Contour Bench, Horizontal Powder-Coated Steel Back And Seat Slats, 3 Cast Aluminum Frames, Freestanding With Surface Mount Tabs Choose Color	441	1	$2,039.00	$2,039.00
	Subtotal	441		Subtotal	$2,039.00
				7.0000% Tax	$180.31
Customer Order Confirmation is required to process order.				Freight - S&H	$536.84
Your Order will not be shipped without your "Order Confirmation"				Grand Total	$2,756.15

Bill To:		Ship To:	
First/Last Name	Jessica St.Martin		
Company	Town of Landis	Ship To	Town of Landis
Address 1	312 South Main St	Address 1	312 South Main St
Address 2		Address 2	
City	Landis	City	Landis
State	NC	State	NC
Zip Code	28088	Zip Code	28088
Country	USA	Country	USA
Phone	704-857-4114	Phone	704-857-4114
Fax		Contact	Jessica St.Martin
Email	jstmartin@townoflandisnc.gov	Email	jstmartin@townoflandisnc.gov

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Michael D. Ambrose, Town Manager

ITEM TYPE: Consideration

AGENDA SECTION: Considerations

SUBJECT: **Consider Discussion of Board Member Appointment to DC & Frances Linn Committee**

DETAILS:

Aldermen Corriher has expressed interest in being apart of the DC and Frances Linn Community Park Committee. If appointed, this would replace Mayor Pro Tem Stewart's position on the committee.

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Staff

ITEM TYPE: Report

AGENDA SECTION: Reports

SUBJECT: **Monthly Departmental Reports**

DETAILS:

Reports in Order:

- Code Enforcement Report
- Fire Report
- Parks and Recreation Report
- Planning and Zoning Report
- Police Report
- Public Works/Utility Billing Report
- Monthly Fleet Report

Item Cover Page

MEETING TYPE Board of Aldermen

DATE: May 12, 2025

SUBMITTED BY: Matthew Geelen, Chief of Police

ITEM TYPE: Report

AGENDA SECTION: Departmental Reports

DETAILS: Monthly Report

VIOLATION ADDRESS	OWNER OR OCCUPANT	STATUS OR CONDITIONS
MINIMUM HOUSING		
400 EAST GARDEN AVENUE	MARY FRANCES AKERS (HEIRS)	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
109 EVERHART AVENUE	MARY GRAY HILTON (HEIRS)	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
111 EVERHART AVENUE	MARY GRAY HILTON (HEIRS)	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
201 EVERHART AVENUE	MARY GRAY HILTON (HEIRS)	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
202 EVERHART AVENUE	MARY GRAY HILTON (HEIRS)	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.

203 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
205 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
206 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
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211 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
212 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**

214 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
215 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
216 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
217 EVERHART AVENUE	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
807 ZION STREET	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
809 ZION STREET	**MARY GRAY HILTON (HEIRS)**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
1020 LINN STREET	**JESUS DOTELO ANDRADE & SUSANA BERNAL LORENZO**	**CLOSED 04/24/2025. THE PROPERTY IS OUTSIDE THE CORPORATE TOWN LIMITS OF LANDIS.**
314 EAST RYDER AVENUE	**SAMANTHA J. LAMBERT**	**CLOSED 04/24/2025. PROPERTY HAS BEEN DEMOLISHED, AND THE YARD HAS BEEN ABATED.**
314 NORTH CENTRAL AVENUE	**EDITH R. DRAPER**	**A HEARING IS SCHEDULED FOR 05/07/2025**
207 WEST GARDEN STREET	**GREGORY T. STILLWAGON**	**A HEARING IS SCHEDULED FOR 05/13/2025.**

NUISANCES		
107 NORTH MERIAH STREET	JAMES A HALL JR (HEIRS)	PROGRESS CONTINUES TO BE MADE AND THE JUNK IS BEING REMOVED FROM THE PROPERTY.
311 SOUTH CENTRAL AVENUE	MARIA J. TRUJILLO	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
508 EAST RYDER AVENUE	MICHAEL G. ADAMS	CASE CLOSED 04/24/2025.
110 NORTH CHAPEL STREET	CHAD BROWN	CASE CLOSED 04/02/2025.
414 SOUTH BEAVER STREET	BRAD A. BALLARD & EMILY L. BALLARD	JUNK VEHICLES ON THE PROPERTY THAT APPEAR TO BE USED AS STORAGE. A NOTICE OF HEARING IS BEING PREPARED.
430 MT MORIAH CHURCH ROAD	THOMAS LINN	HIGH GRASS AND DEBRIS AROUND THE PROPERTY. CLOSED 3/15/2025.
1005 SOUTH ZION STREET	ALLISON C. COLLINS & SUSAN K. R. COLLINS	CASE CLOSED. 04/15/2025
920 COLONIAL DRIVE	CHARLES E. MCCRAVEN & SUSUA A. MCCRAVEN	FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.
990 COLONIAL DRIVE	JOEL GEROLIMATOS & EMILY GEROLIMATOS	A NOTICE OF VIOLATION HAS BEEN SENT.
717 WEST RYDER AVENUE	ANN M. HAGAN	THERE IS A SIGNIFICANT AMOUNT OF TRASH, DEBRIS, AND JUNK AROUND THE PROPERTY. A NOTICE OF VIOLATION IS BEING PREPARED.
702 WEST MILL STREET	AUTHUR D. HOKE	A NOTICE OF HEARING IS SCHEDULED FOR 05/13/2025.
212 WEST RYDER AVENUE	RANDALL K. TURNER	SEVERE AMOUNTS OF TRASH AROUND THE PROPERTY. A NOTICE OF VIOLATION IS BEING PREPARED. A HEARING IS SCHEDULED FOR 05/13/2025.

ABANDONED-JUNKED-NUISANCE VEHICLES		
ZONING		
NON-RESIDENTIAL BUILDINGS		
2570 SOUTH US 29 HWY	**JOSEPH J ROJAS**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**
616 SOUTH MAIN STREET	**DWAYNE V. CROUCH, ARNOLD J. CROUCH & CARLYIN H. CROUCH**	**FINDING OF FACT BEING COMPLETED. IF NO PROGRESS IS MADE, AN ORDINANCE TO VACATE AND DEMOLISH WILL GO BEFORE THE BOARD OF ALDERMEN IN JUNE.**

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Jason Smith, Fire Chief

ITEM TYPE: Report

AGENDA SECTION: Departmental Reports

SUBJECT: **Monthly Report**

DETAILS:

MONTHLY STATS

MEDICAL: 38

FIRE: 42

TRAFFIC ACCIDENT: 7

MUTUAL AID GIVEN: 39

MUTUAL AID RECEIVED: 13

TOTAL CALLS: 87

VEHICLE MILAGE

ENGINE 443: 114137

ENGINE 442: 36987

ENGINE 441: 5310

LADDER 58: 23455

CAR 44: 139415

CHIEF 440: 25047

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Jessica St. Martin, Parks and Recreation Director

ITEM TYPE: Report

AGENDA SECTION: Departmental Reports

SUBJECT: **Monthly Report**

DETAILS:

Events:

- LOVE Landis Week is May 2nd-10th - Several events have been scheduled for the week to encourage citizens to get out, explore areas around Town and engage with local business owners, churches, and Town employees.
- DCFL Future Home Signs have been received and are installed for the groundbreaking.

Park Operations

- Lake Corriher Park's extended hours began April 1st. Office hours are 8:00am-8:00pm
- Park Staff are continuing trail and park grounds maintenance.
- Park Staff are continuing to monitor the lake levels. Lake Landis dam is still blocked off to pedestrians.
- The Blue Ridge Trails located around Lake Corriher are currently closed due to Mt. Moriah Church's logging project.
- Town Staff are still in the process of hiring part-time seasonal park staff.

Pool Operations:

- Town Staff are still in the process of hiring seasonal pool staff. We are currently not fully staffed with lifeguards currently.
- Town Staff are still in the process of hiring a Facilities Manager.
- The pool is tentatively scheduled to open May 26th.
- New picnic tables will be arriving in May for the Pool area.

Campsite Reservations: 25 **Shelter Rentals**: 1 **Daily Fishing Passes Sold**: 667
Annual Passes Sold: 5 **NC State License**: 26 **Boat Registration:** 6
2020 Ford Explorer Mileage: 67485
Ford F250 Mileage: 171957

Active Permit Report

03/25/2025 - 04/25/2025

City Permit #	Permit Date	Permit Type	Site Address	Main Status	Project Name	Owner	Stage of Construction
ZN-25-24	3/27/2025	Driveway	212 W. LIMITS ST	6. COMPLETE	N/A	LAST NAME, FIRST NAME	Building Construction
ZN-25-25	4/1/2025	Sign	119 S CENTRAL DR	5. CONSTRUCTION ADMINISTRATION	FLETCHER & GAINES	PHILCOX PROPERTIES LLC	Building Construction
ZN-25-26	4/2/2025	Fence	103 N MERIAH ST	5. CONSTRUCTION ADMINISTRATION	N/A	GORE, JAREES	Building Construction
ZN-25-27	4/4/2025		314 E RYDER ST	5. CONSTRUCTION ADMINISTRATION	N/A	LAMBERT, SAMATHA	Complete
ZN-25-28	4/14/2025	Fence	1205 S HIGHLAND AVE	5. CONSTRUCTION ADMINISTRATION	N/A	SANDIFER, BRYAN	Building Construction
ZN-25-29	4/23/2025	Driveway	120 MT MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ZAGATA, PATRICIA	Building Construction
ZN-25-30	4/23/2025	Driveway	250 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	GLENN CORRIHER	Building Construction
ZN-25-31	4/23/2025	Driveway	320 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	MARLOWE, JERRY	Building Construction
ZN-25-32	4/23/2025	Driveway	430 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	LINN, THOMAS	Building Construction
ZN-25-33	4/23/2025	Driveway	440 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	HULL, MARK	Building Construction
ZN-25-34	4/23/2025	Driveway	450 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ALVAREZ, MARIA	Building Construction
ZN-25-35	4/23/2025	Driveway	520 MT. MORIAH CHRUCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	GLOVER, JAMES	Building Construction
ZN-25-36	4/23/2025	Driveway	530 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ROACH, MELANIE	Building Construction
ZN-25-37	4/23/2025	Deck	770 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	HANCOCK, PATRICK	Building Construction

ZN-25-38	4/23/2025	Driveway	790 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	BYERS, JAMES	Construction
ZN-25-39	4/23/2025	Driveway	810 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	EDWARDS, CONSTANCE	Building Construction
ZN-25-40	4/23/2025	Driveway	820 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ROBERTS, SHANE	Building Construction
ZN-25-41	4/23/2025	Driveway	940 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	BARE CARL	Building Construction
ZN-25-42	4/23/2025	Driveway	950 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	WILHOIT, PAUL	Building Construction
ZN-25-43	4/23/2025	Driveway	960 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	CUELLO, SARIEL	Building Construction
ZN-25-44	4/23/2025	Driveway	1130 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	REED, ROBERT	Building Construction
ZN-25-45	4/23/2025	Driveway	1170 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	LOVER, PAUL	Building Construction
ZN-25-46	4/23/2025	Driveway	1290 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	SEXTON, CHRISTOPHER	Building Construction
ZN-25-47	4/23/2025	Driveway	1320 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	SALAZAR, ANAY	Building Construction
ZN-25-48	4/23/2025	Driveway	1340 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	BROWN, CLARA	Building Construction
ZN-25-49	4/24/2025	Accessory Building	120 W GARDEN ST	5. CONSTRUCTION ADMINISTRATION	RACE TEAM	REAUME, JOSH	Building Construction
ZN-25-50	4/25/2025	Fence	120 W GARDEN ST	5. CONSTRUCTION ADMINISTRATION	RACE TEAM	REAUME, JOSH	Building Construction
ZN-25-51	4/25/2025	Driveway	784 MT MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	STEFANICK, ANDREW	Building Construction
ZN-25-52	4/25/2025	Driveway	970 MT MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS, NC	ALMANZA, JOSE & MARTA	Building Construction
ZN-25-53	4/25/2025	Driveway	304 BUFORD DR	6. COMPLETE	N/A	PRESPRO, LLC	Building Construction
ZN-25-54	4/25/2025	Driveway	306 BUFORD DR	6. COMPLETE	N/A	PRESPRO, LLC	Building Construction

Total Records: 31

Permits Issued Report

4/1/2025 - 4/30/2025

City Permit #	Permit Date	Permit Type	Site Address	Main Status	Project Name	Owner	Stage of Construction
ZN-25-25	4/1/2025	Sign	119 S CENTRAL DR	5. CONSTRUCTION ADMINISTRATION	FLETCHER & GAINES	PHILCOX PROPERTIES LLC	Building Construction
ZN-25-26	4/2/2025	Fence	103 N MERIAH ST	5. CONSTRUCTION ADMINISTRATION	N/A	GORE, JAREES	Building Construction
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ZN-25-28	4/14/2025	Fence	1205 S HIGHLAND AVE	6. COMPLETE	N/A	SANDIFER, BRYAN	Building Construction
ZN-25-29	4/23/2025	Driveway	120 MT MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ZAGATA, PATRICIA	Building Construction
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ZN-25-34	4/23/2025	Driveway	450 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ALVAREZ,MARIA	Building Construction
ZN-25-35	4/23/2025	Driveway	520 MT. MORIAH CHRUCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	GLOVER, JAMES	Building Construction
ZN-25-36	4/23/2025	Driveway	530 MT. MORIAH CHURCH RD	5. CONSTRUCTION ADMINISTRATION	ENBRIDGE GAS NC	ROACH,MELANIE	Building Construction

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ZN-25-44	4/23/2025	Driveway	1130 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	REED,ROBERT	Complete
ZN-25-45	4/23/2025	Driveway	1170 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	LOVER, PAUL	Complete
ZN-25-46	4/23/2025	Driveway	1290 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	SEXTON, CHRISTOPHER	Complete
ZN-25-47	4/23/2025	Driveway	1320 MT. MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS NC	SALAZAR, ANAY	Complete
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ZN-25-52	4/25/2025	Driveway	970 MT MORIAH CHURCH RD	6. COMPLETE	ENBRIDGE GAS, NC	ALMANZA, JOSE & MARTA	Complete

ZN-25-53	4/25/2025	Driveway	304 BUFORD DR	6. COMPLETE	N/A	PRESPRO, LLC	Construction
ZN-25-54	4/25/2025	Driveway	306 BUFORD DR	6. COMPLETE	N/A	PRESPRO, LLC	Building Construction
ZN-25-55	4/29/2025	Sign	512 W. RYDER AVE	5. CONSTRUCTION ADMINISTRATION	N/A	LANDIS BAPTIST CHURCH	Building Construction

Total Records: 31 **4/30/2025**

Department Report

MEETING TYPE: Board of Aldermen

DATE: May 12, 2025

SUBMITTED BY: Matthew Geelen, Police Chief

ITEM TYPE: Report

AGENDA SECTION: Departmental Report

SUBJECT: **Monthly Report**

DETAILS:

Total Calls for Service (Including Self-Initiated Calls) – 1,199

Self-Initiated Calls – 927

Calls for Service – 149

Traffic Stops - 71

Traffic Accidents - 3

Vehicle Mileage:

LPD-081: 148,132	LPD-173: 95,974	LPD-212: 30,169
LPD-101: 108,500	LPD-174: 83,909	LPD-232: 13,737
LPD-151: 78,763	LPD-175: 87,060	LPD-233: 12,960
LPD-161: 79,115	LPD-176: 83,448	
LPD-171: 85,125	LPD-177: 96,274	

Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Blake Abernathy, Public Works Director

ITEM TYPE: Report

AGENDA SECTION: Department Reports

SUBJECT: **Monthly Report**

DETAILS:

PUBLIC WORKS MONTHLY REPORT

Water Resources	
Work Orders Completed	73
Start Services	26
Stop Services	7
Disconnects	4
Outages	8
Meter/MXU Change Outs	2
Sewer Lift Station Checks	37
Hydrant Routes (Water Quality Flushing)	20
Water Pump Station Checks	20
Stormwater Department	
Work Orders Completed	3
Preventative Maintenance (e.g. Ditch Cleaning, Culvert Jetting, etc.)	3
Street Department	
Work Orders Completed	73
Rowan County Dump Runs	8
Bul Trash/Debris Routes	9
Utility Services	
Cash Payments	427
Credit Card Payments	1465
Check Payments	1202
Bank Draft Payments	492
Disconnections	48
AMI Electrical Meters	3327
Remaining Manual Meters	26
Water Meters	2233
Customer Usage Portal	531

Electric Department	
Work Orders Completed	123
Start Services	40
Stop Services	15
Disconnects	44
New Temp Service	19
Street/Security Lights Install/Repair	13
Pole Repair/Replace	13
Outages:	
Environmental	1
Load Demand	1
Vehicle Collison	0
Total Outages	2
Reporting Made By	
Go Gov	1
Walk In	55
Phone Call	152

Monthly Fleet Report

Department	Unit Number	Year	Make	Model	Mileage	Category
Fire	44	2010	DODGE	Charger	139415.00	Vehicle
Fire	440	2021	RAM	1500	25193.00	Vehicle
Fire	442	1986	Seagrave		36987.00	Vehicle
Fire	443	2005	PIERCE MANUFACTURING	Arrow XT	114155.00	Vehicle
Fire	58	2006	HME	Fire Truck	23455.00	Vehicle
Fire	580	1947	LaFrance		30334.00	Vehicle
Parks and Recreation	52	2020	FORD	Explorer	67485.00	Vehicle
Parks and Recreation	61	2006	FORD	F-250	171957.00	Vehicle
Police	101	2010	DODGE	Charger	108500.00	Vehicle
Police	151	2015	DODGE	Charger	78763.00	Vehicle
Police	161	2016	FORD	Explorer	79182.00	Vehicle
Police	171	2017	DODGE	Charger	85125.00	Vehicle
Police	173	2017	FORD	Explorer	95974.00	Vehicle
Police	174	2017	FORD	Explorer	83909.00	Vehicle
Police	175	2017	FORD	Explorer	87107.00	Vehicle
Police	176	2017	FORD	Explorer	83448.00	Vehicle
Police	177	2017	FORD	Explorer	96274.00	Vehicle
Police	212	2021	RAM	1500	30169.00	Vehicle
Police	232	2023	FORD	Explorer	13737.00	Vehicle
Police	233	2024	CHEVROLET	Silverado HD	12960.00	Vehicle
Police	80	2008	FORD	Crown Victoria	148132.00	Vehicle
Public Works	10	2019	FORD	F-250	40579.00	Vehicle
Public Works	14	2015	RAM	5500	117568.00	Vehicle
Public Works	15	2016	FREIGHTLINER	M2	2929.00	Vehicle
Public Works	16	1992	CHEVROLET	C7	23290.00	Vehicle

DRAFT

Department	Unit Number	Year	Make	Model	Mileage	Category
Public Works	17	2011	FORD	F-350	88660.00	Vehicle
Public Works	2	2009	FORD	F-250	169098.00	Vehicle
Public Works	21	1996	FORD	F-800	51070.00	Vehicle
Public Works	25	2018	FREIGHTLINER	114SD	2923.00	Vehicle
Public Works	3	2022	FORD	F-150	55123.00	Vehicle
Public Works	33	2011	FORD	F-150	180436.00	Vehicle
Public Works	40	2016	FREIGHTLINER	M2	27436.00	Vehicle
Public Works	45	2024	FORD	F-550	6032.00	Vehicle
Public Works	46	2025	FORD	F-150	143.00	Vehicle
Public Works	5	2022	FORD	F-150	32507.00	Vehicle
Public Works	50	2015	FREIGHTLINER	M2	5298.00	Vehicle
Public Works	6	1997	FORD	F-250	168742.00	Vehicle
Streets	12	2000	CHEVROLET	GMT-400	184729.00	Vehicle
Streets	18	2023	FREIGHTLINER	M2	2531.00	Vehicle
Streets	22	2000	FORD	F-750	50374.00	Vehicle
Streets	31	2016	KENWORTH	T3 Series	93297.00	Vehicle
Streets	32	2013	INTERNATIONAL	MA065	27614.00	Vehicle
Streets	42	2022	FORD	F-550	22544.00	Vehicle
Streets	7	2012	FORD	F-250	109190.00	Vehicle
Streets	9	2022	FORD	F-150	29682.00	Vehicle
Town Hall	1	2023	CHEVROLET	Silverado	56202.00	Vehicle
Town Hall	131	2013	CHEVROLET	Tahoe	107999.00	Vehicle

Total Records: 47

5/6/2025

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Item Cover Page

MEETING TYPE: Board of Alderman

DATE: May 12, 2025

SUBMITTED BY: Michael D. Ambrose, Town Manager

ITEM TYPE: Report

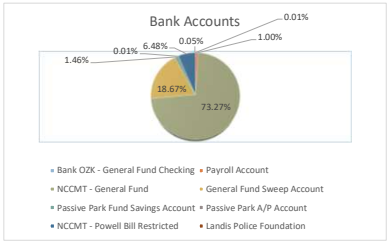
AGENDA SECTION: Reports

SUBJECT: **Monthly Financial Dashboard**

DETAILS:

April 2025 Financial Report

Operating Budget Revenues	Budgeted FY25	April	FY25 YTD	%
Property Tax - Current	$2,175,104	$22,191	$2,149,754	99%
Tax Collection - Prior Years	$45,000	$1,474	$51,230	114%
Vehicle Interest	$1,500	$149	$1,696	113%
Interest and Penalties	$10,000	$743	$13,742	100%
Property Tax Auto - Current	$228,595	$16,863	$202,678	89%
Vehicle Tag Fee	$65,000	$5,640	$58,460	90%
Building Rental Fees	$7,200	$575	$8,725	121%
Sponsorships	$1,500	$0	$0	0%
Interest on Investments	$190,000	$22,920	$22,475	12%
Interest on Investments - Powell Bill	$0	$2,914	$23,298	0%
Miscellaneous Income	$0	$3	$2,139	100%
Police Fees & Fines	$850	$60	$488	57%
First Responder	$1,500	$135	$3,215	214%
Grant Received	$40,080	$161,660	$230,989	0%
Excise Tax on Piped Gas	$11,000	$0	$2,471	22%
Franchise Tax on Electric PO	$292,927	$0	$252,794	86%
Sales Tax on Telecommunications	$7,931	$0	$4,527	57%
Sales Tax on Video Programming	$9,346	$0	$4,496	48%
Local Government Sales & Use Tax	$910,000	$102,627	$1,147,852	126%
Powell Bill Revenues	$185,000	$0	$144,775	78%
ABC Revenue - County	$14,000	$3,710	$16,098	115%
Court Cost	$200	$81	$969	100%
Sales Tax Refund	$70,000	$0	$0	100%
Planning/Zoning Fees	$75,000	$16,411	$90,265	120%
Code Enforcement Clean-up	$0	$0	$296	100%
Garbage Collection Fees	$340,000	$31,545	$313,104	92%
Resource Officer Reimburse	$170,000	$0	$184,050	108%
EMS Utility Reimbursement	$5,000	$110	$2,250	45%
ABC Profits - State	$15,000	$0	$0	100%
Solid Waste Disposal Tax	$3,100	$0	$2,249	100%
East Landis Property Tax	$32,000	$930	$36,887	115%
St Utilities Coll County	$0	$0	$383	100%
East Landis Tax - Prior Years	$200	$0	$0	0%
East Landis Penalties and Interest	$1,500	$73	$1,350	90%
East Landis - Motor Vehicles	$4,500	$433	$4,502	100%
Debt Setoff	$100	$0	$0	100%
Police Service Reimbursement	$0	$410	$5,124	100%
Fire Service Reimbursement	$0	$0	$405	0%
Insurance Proceeds	$45,497	$0	$10,568	0%
Sale of Fixed & Surplus Assets	$50,000	$68,818	$157,223	100%
Rowan Municipal Association	$2,000	$0	$1,464	73%
Fund Balance Appropriated	$1,132,847	$0	$0	0%
Administrative Service Charges	$797,422	$0	$598,068	75%
Park Revenues	$155,900	$13,006	$120,402	77%
Water Service	$1,130,000	$96,880	$962,293	85%
East Landis Water	$50,000	$0	$0	0%
Reconnect Fees	$0	$4,350	$27,375	100%
Water Tap Access Fee	$0	$0	$4,704	100%
Interest on Investments	$84,000	$2,800	$31,053	37%
Miscellaneous Income	$0	$0	$6,155	0%
Tap Fees - Water	$50,000	$28,319	$48,456	97%
Grant - Water	$5,654,870	$0	$157,650	0%
Planning Review Fees	$0	$10,338	$51,038	0%
Debt Setoff	$5,000	$0	$0	0%
Fund Balance Appropriated	$70,375	$0	$0	0%
Sewer Service Fees	$1,024,000	$89,052	$864,730	84%
Sewer Impact Fees	$15,000	$0	$8,904	59%
Interest on Investments	$0	$2,800	$31,040	100%
Tap Fees	$35,000	$0	$17,103	49%
Planning Review Fees	$0	$0	$634	100%
Grant Received-Sewer	$2,703,131	$0	$613,450	23%
Fund Balance Appropriated	$56,438	$0	$0	0%
Stormwater Fees	$115,000	$9,940	$99,010	86%
Interest on Investments - Stormwater	$2,000	$201	$2,206	100%
Planning/Zoning Fees	$0	$15,702	$59,903	100%
Fund Balance Appropriated	$3,147	$0	$0	100%
Electricity Fees	$6,095,000	$416,052	$5,225,523	86%
Penalties - Electric	$100,000	$4,261	$82,122	100%
Reconnect Fees	$40,000	$0	$12,150	30%
Meter Tampering Fees	$1,000	$0	$400	0%
Pole Attachments	$500	$0	$11,041	100%
Interest on Investments - Electric	$70,000	$6,204	$67,674	97%
Miscellaneous Income	$1,000	$0	$10,880	100%
Underground Service	$400	$4,197	$4,197	0%
Payment Return Fees	$3,000	$0	$1,330	44%
Debt Setoff	$3,000	$4,976	$9,563	100%
Sale of Surplus Assets - Electric	$8,000	$0	$0	0%
Vendor Reimbursement	$982,979	$0	$983,123	0%
RE Appropriated - Electric	$331,172	$0	$0	0%
	$25,730,811	**$1,169,554**	**$15,265,165**	**59%**



Bank Balances		
Bank OZK - General Fund Checking	$1,000	0.01%
Payroll Account	$963	0.01%
NCCMT - General Fund	$9,914,918	75.16%
General Fund Sweep Account	$2,252,499	17.08%
Passive Park Fund Savings Account	$186,510	1.41%
Passive Park A/P Account	$1,000	0.01%
NCCMT - Powell Bill Restricted	$827,972	6.28%
Landis Police Foundation	$6,410	0.05%
TOTAL	13,191,273	*100%*

Operating Budget Expenditures	Budgeted FY24/25	April	FY24/25 YTD	%
Administration	$1,438,529	$88,948.84	$985,684.59	69%
Police Department	$1,675,674	$121,480.97	$1,261,721.71	75%
Fire Department	$1,513,896	$71,140.60	$1,255,009.79	83%
Streets Department	$1,529,213	$60,836.42	$1,138,729.25	74%
Sanitation Department	$310,000	$22,386.17	$216,199.22	70%
Parks and Recreation	$569,462	$30,903.25	$443,597.23	78%
Electric Department	$7,636,051	$357,896.06	$5,235,808.89	69%
Water Department	$6,673,382	$210,585.06	$3,686,608.31	55%
Sewer Department	$3,905,432	$343,359.41	$1,483,790.62	38%
Storm Water Department	$120,147	$11,646.42	$51,059.29	42%
Debt Service - Municipal Loan/Copiers	$60,025	$836.17	$57,028.46	95%
Debt Svc-USDA Bonds/Sewer Eq/Srf Loan	$299,000	$0.00	$55,228.91	18%
Total Expenditures	***$25,730,811***	***$1,320,019***	***$15,870,466***	**62%**

Landis Police Foundation	**Balance $6503.05**	**Allocated**	**Received/Expensed April 2025**	**FY25**
Revenues - Sponsorships & Interest			$206	*$12,432*
Expenditures			$0	$12,226

Passive Park Fund	**Balance $182,853.68**	**Allocated**	**Received/Expensed April 2025**	**FY25**
Revenues - Sponsorships & Interest			3776.14	$19,693
Expenditures				$15,200
Groundbreaking Ceremony Expenses		$4,285	$715	
		$4,285	$4,491	

Downtown Revitalization Grant (Project #25-6)	**Completed**	**Allocated**	**Received**	**TOTAL**
Revenues			$100,000	100,000.00
Expenditures		**Allocated**	**Expensed**	**Completed**
Globes and new light bulbs for Central Avenue			**$12,370**	**$12,370**
Landscaping (Project#s 25-10, 25-11, 25-12, 25-13, and 25-38)			**$65,691**	**$65,691**
Repair on Town Crier Clock			**$9,084**	**$9,084**
Christmas Banners			**$2,626**	**$2,626**
Banners for all Seasons			**$10,229**	**$10,229**
	Totals	$0	**$100,000**	**$100,000**

Powell Bill	**Balance $282,916**		**April 2025**	**FY25**
Revenues			$0	**$144,775**
Expenditures		**Allocated**	**Expensed**	**Completed**
Rent Street Sweeper			**$3,400**	**$3,400**
Sidewalk Project (project #25-28)			**$51,750**	**$51,750**
Traffic Directional/Speed Signs			**$4,149**	**$4,149**
Stormwater Repair (Jefferson St / Airport Rd)			**$6,358**	**$6,358**
Rent Street Sweeper - Christmas Season			**$4,375**	**$4,375**
Road Closure on E Mills Drive			**$844**	**$844**
Curb and Gutter Concrete Replacement - Woodfield Drive			**$3,175**	**$3,175**
Traffic Directional/Speed Signs			**$158**	**$158**
Paving		$217,233	**$0**	**$0**
	Totals	$0	**$74,209**	**$74,209**

Town Manager Report
Month of April 2025

We have completed the fourth month of the calendar year. I want to continue giving an overview as part of my manager's report.

1. Park Staff and Department Heads had a successful Love Landis Week. This week consisted of small events every day during the week, which we appreciate the citizens, and visitors for attending.
2. The Groundbreaking Event for the DC and Frances Linn Community Park was held on May 2, 2025, from Noon – 2pm at 116 N Central Avenue Landis, NC 28088. This event was well attended, and we appreciate the elected officials, citizens, and community partners for attending that momentous occasion.
3. Town Staff have participated in budget retreats with the Board, and the budget is ready for it's first presentation at the May regular scheduled meeting on May 12, 2025.
4. The Round-A-Bout Project on Cannon Farm Road/Mt Moriah Church Road/NC 153 did begin on April 21, 2025. The contractors for the NC DOT on the project do not anticipate traffic being impacted at first; however, there will be lane and road closures soon.
5. Town Staff and I have been working with FEMA to secure our reimbursement funds from the 2023 Tornado Event, Tropical Storm Debby, and Hurricane Helene damages. This process is still ongoing, and will take some time; however, the town will be able to recover most of the damage these storms caused.
6. The Town's Wayfinding Sign Project is finally moving forward. This project was funded and executed by Rowan County Tourism, and town staff are excited to see this project come to fruition. The Town appreciates Rowan County Tourism's partnership to make the signage a reality. The signs went in this last week, and look great.
7. The Town's 2024 paving contract is behind schedule (according to the contractor) however it should be completed in the Summer/Fall of 2025. We will post the affected roadways on our website, and social media outlets around that time frame, so citizens will be aware of any detours.
8. Town Staff are requesting approval to apply for the Spring 2025 round of NCDEQ grant and/ or state low interest loan funding for two new water tanks, one in East Landis, and one for the south end. These water tanks are recommended by our Water Resources Engineers at Municipal Engineering, to increase water flows on the East Landis side of town for fire protection, and increase water quality, and fire flows, for the new Irish Creek Phase 2 development on the south end of town.

Please stop by my office or contact me directly if you have any issues or concerns.

Thank you,
Michael D. Ambrose

2025 MAY

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	1	2 DCFL Park Groundbreaking 12PM Downtown Cruise-In 5-9PM	3
4	5 Firefighter Funday N. Central Ave 4-6 PM	6 Pizza With Public Works N. Central Ave 4-6 PM	7 Businesses with Badges Central Ave 4-6 PM	8 Talk with Town Hall 312 S. Main St 4:30-5:30 PM Board of Aldermen Work Session Meeting: 5:30PM	9 Kids Fish Free Friday Lake Corriher Park 4-6 PM	10 Shred it Event @ Town Hall 10:00AM-1:00PM
11 Mother's Day	12 Board of Aldermen Regular Scheduled Meeting: 6:00PM	13	14	15	16	17
18	19 Special Called DCFL Park Committee Meeting: 6:00PM	20 Planning Board Meeting: 6:00PM	21	22	23	24
25	26 Town Offices Closed in observance of Memorial Day	27	28	29	30	31
1	2	3	4	5	6	7

APRIL

JUNE

NOTE

2025 JUNE

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
25	26	27	28	29	30	31
1	2	3	4 Senior Luncheon 12:00 Noon @ Trinity Lutheran Church	5 Board of Aldermen Work Session Meeting: 5:30PM	6 Downtown Cruise-In 5-9PM	7
8	9 Board of Aldermen Regular Scheduled Meeting: 6:00PM	10	11	12	13	14
15 Father's Day	16	17 Planning Board Meeting: 6:00PM	18	19	20	21
22	23 DCFL Park Committee Meeting: 6:00PM	24	25	26	27	28
29	30	1	2	3	4	5

MAY

JULY

NOTE